

# KIC 009602562

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009602562-01	OBS	3985.01	3.556540	133.523782	213.3	11.973	20.4	23.3	1.11	5950	3.30	619.70
009602562-02	OBS	No	92.097653	169.294628	566.2	18.964	16.1	7.1	1.11	5950	3.57	8.09
009602562-03	OBS	No	131.537964	197.256527	135.7	73.411	13.5	2.0	1.11	5950	1.31	5.03

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009602562-01	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH
009602562-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009602562-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

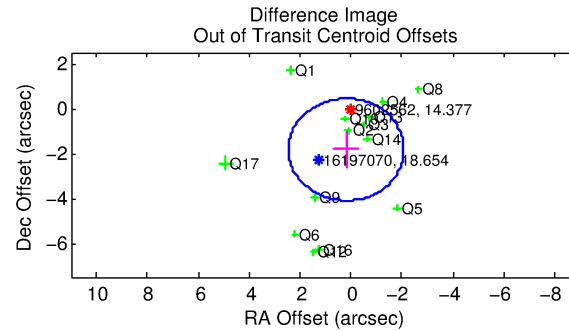
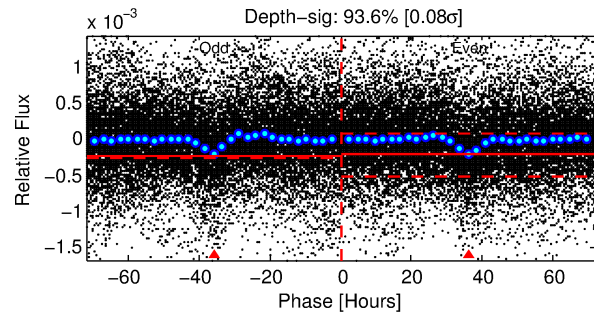
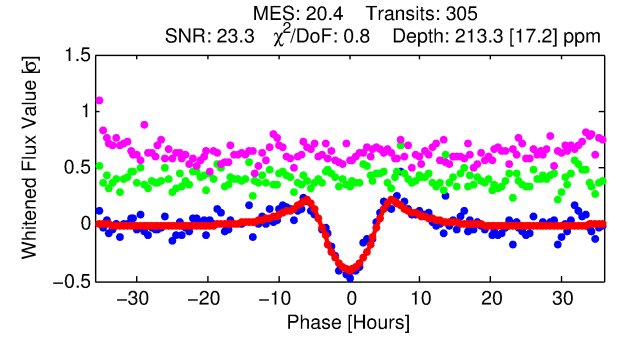
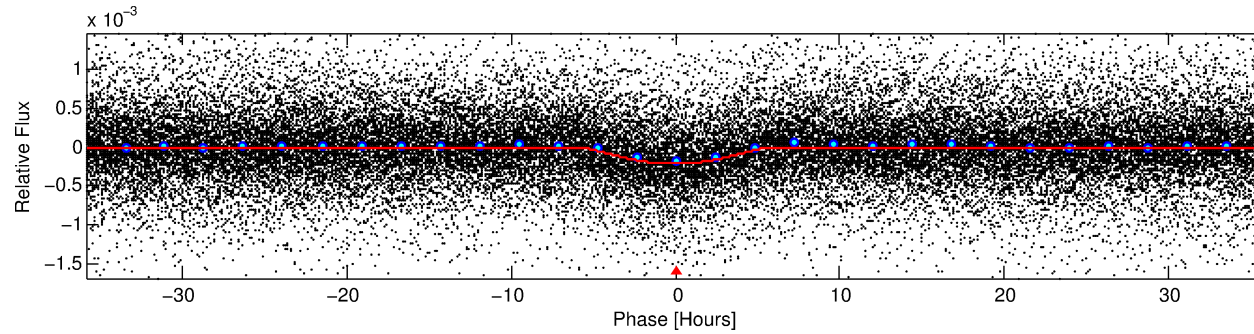
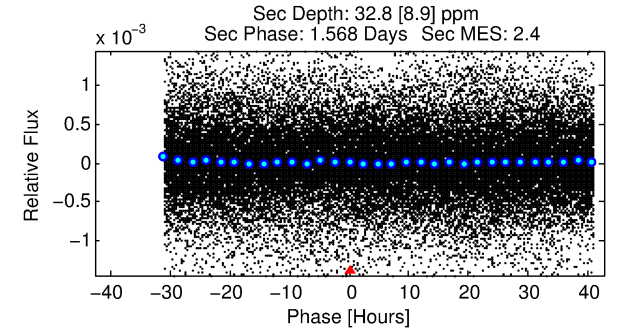
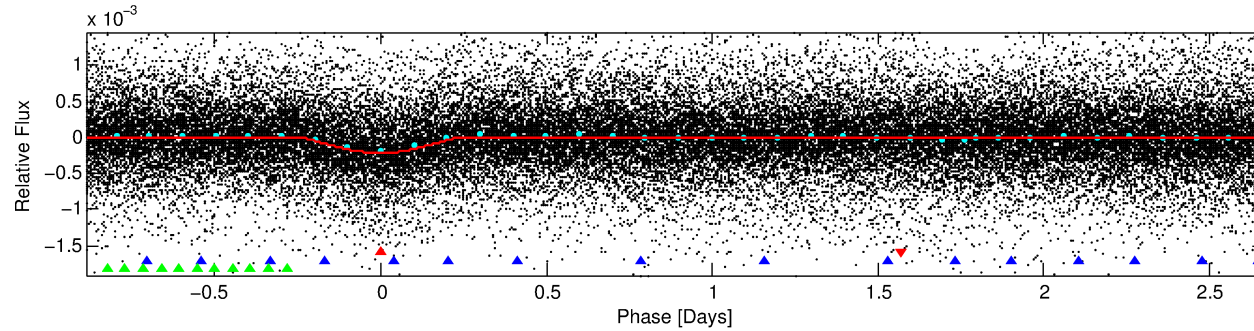
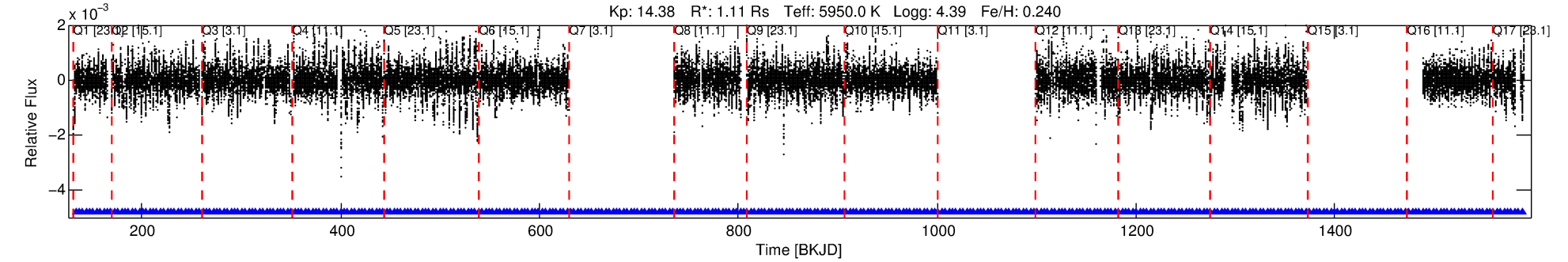
## Ephemeris Match Information For 009602562-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
009602562-01	9602562	V995-Cyg-pri	9602595	1:1	104.7	5	26	11.88	14.38	3619.30	Direct-PRF	0	0.27	0.06

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 9602562 Candidate: 1 of 3 Period: 3.557 d  
KOI: K03985.01 Corr: 0.987



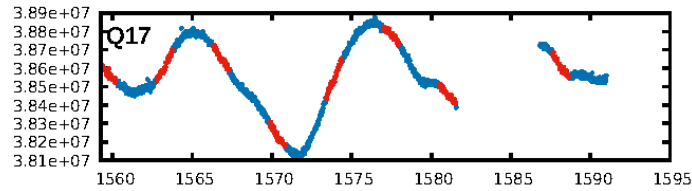
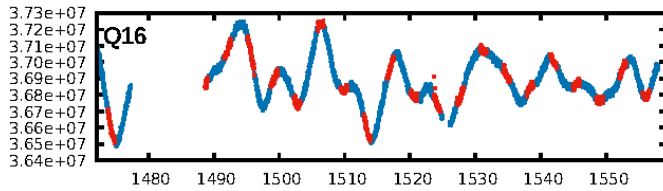
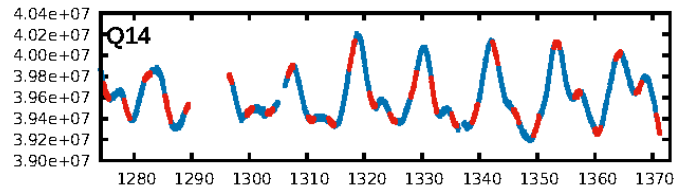
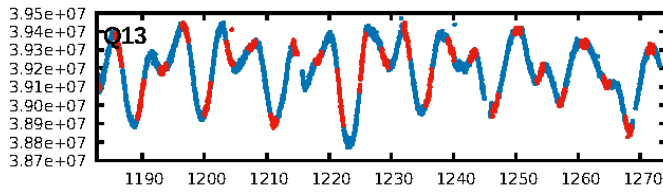
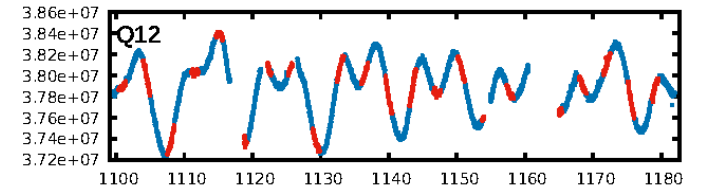
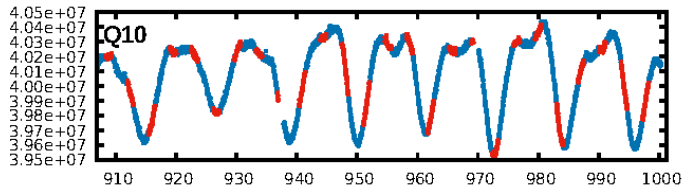
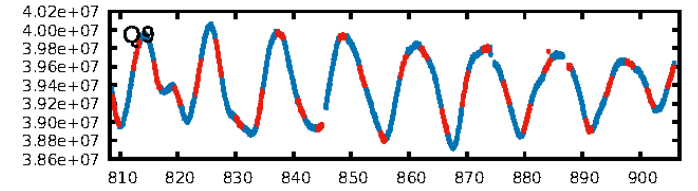
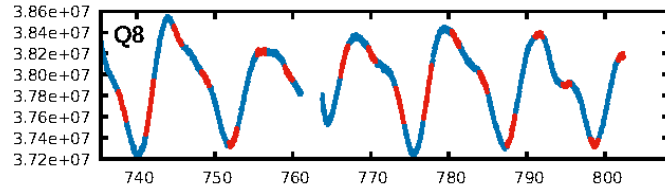
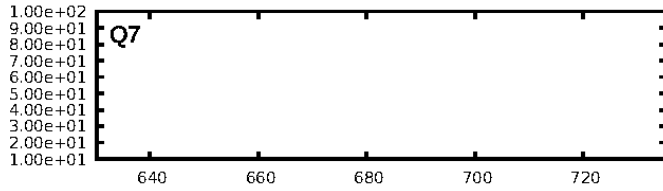
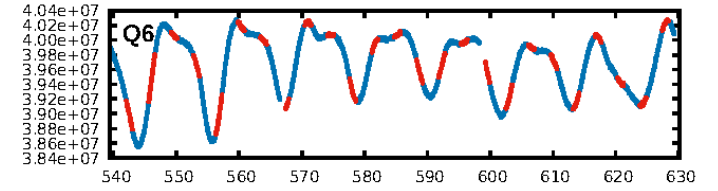
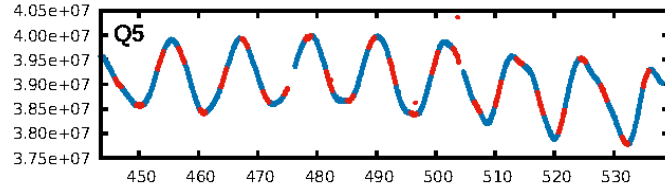
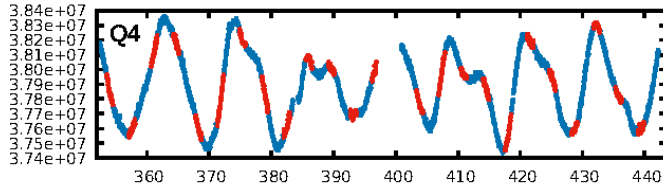
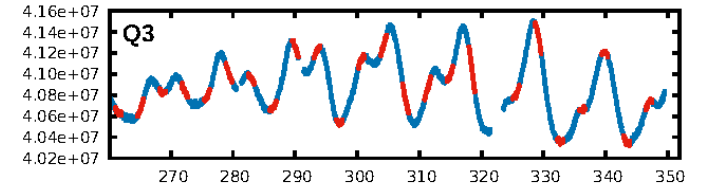
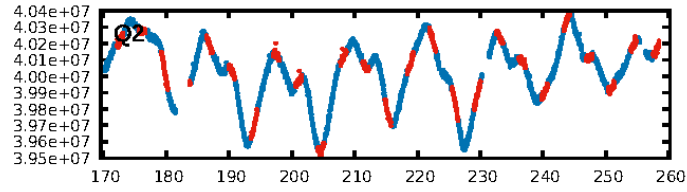
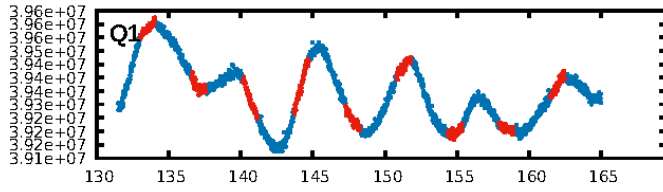
## DV Fit Results:

Period = 3.55654 [0.00003] d  
Epoch = 133.5238 [0.0072] BKJD  
Rp/R\* = 0.0271 [0.0221]  
a/R\* = 1.14 [0.03]  
b = 1.00 [0.03]  
Seff = 619.70 [248.87]  
Teff = 1272 [128] K  
Rp = 3.30 [2.88] Re  
a = 0.0474 [0.0124] AU  
Ag = 3.73 [6.33] [0.43σ]  
Teffp = 2734 [1134] K [1.28σ]

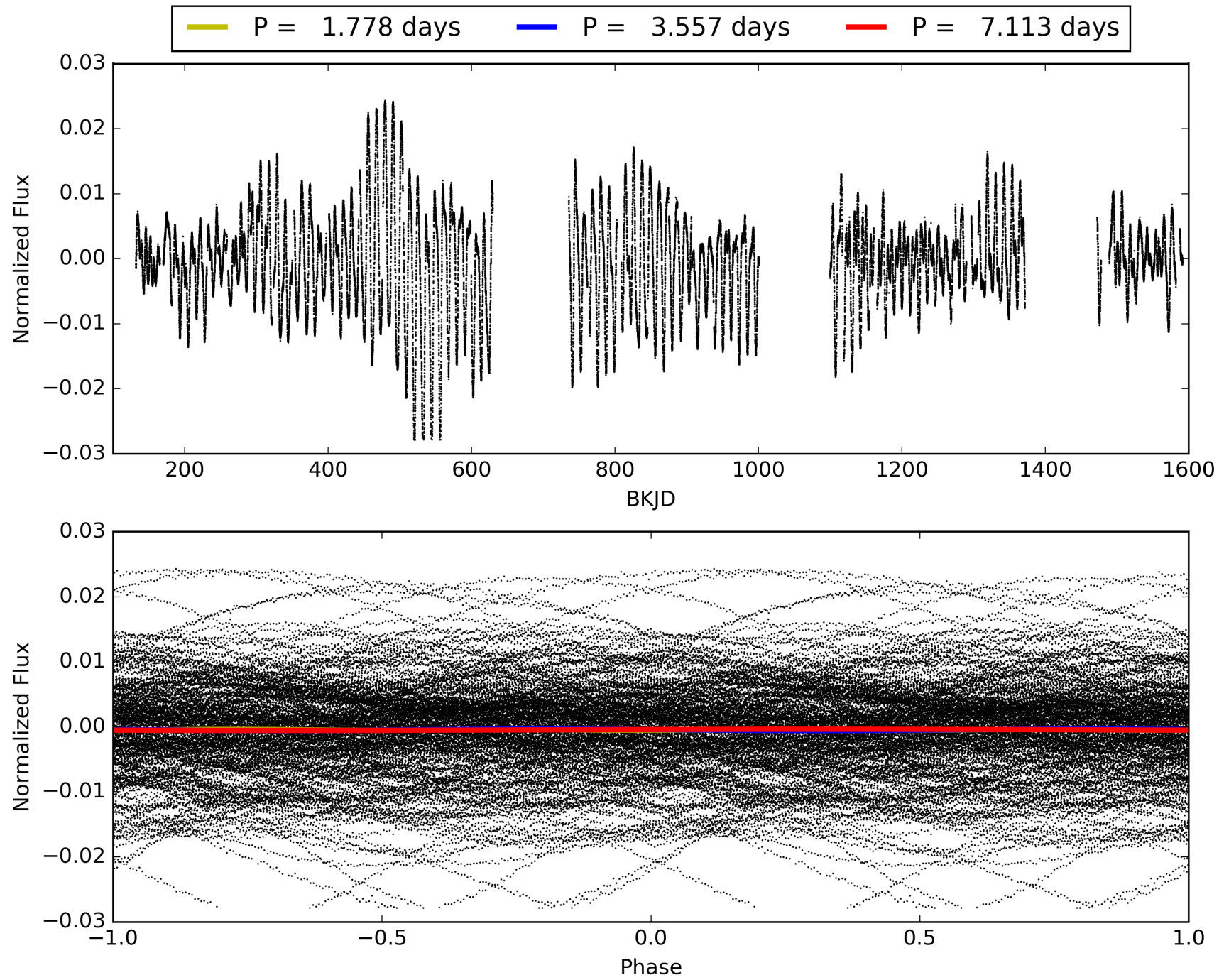
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [94.75σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.11e-65  
RollingBand-fgt: 1.00 [288/288]  
**GhostDiagnostic-chr: -0.04573**  
Centroid-sig: 11.1%  
Centroid-so: 0.473 arcsec [1.41σ]  
OotOffset-rm: 1.836 arcsec [2.42σ]  
KicOffset-rm: 1.852 arcsec [2.46σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 0.21 [3/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 009602562-01, PDC Light Curves

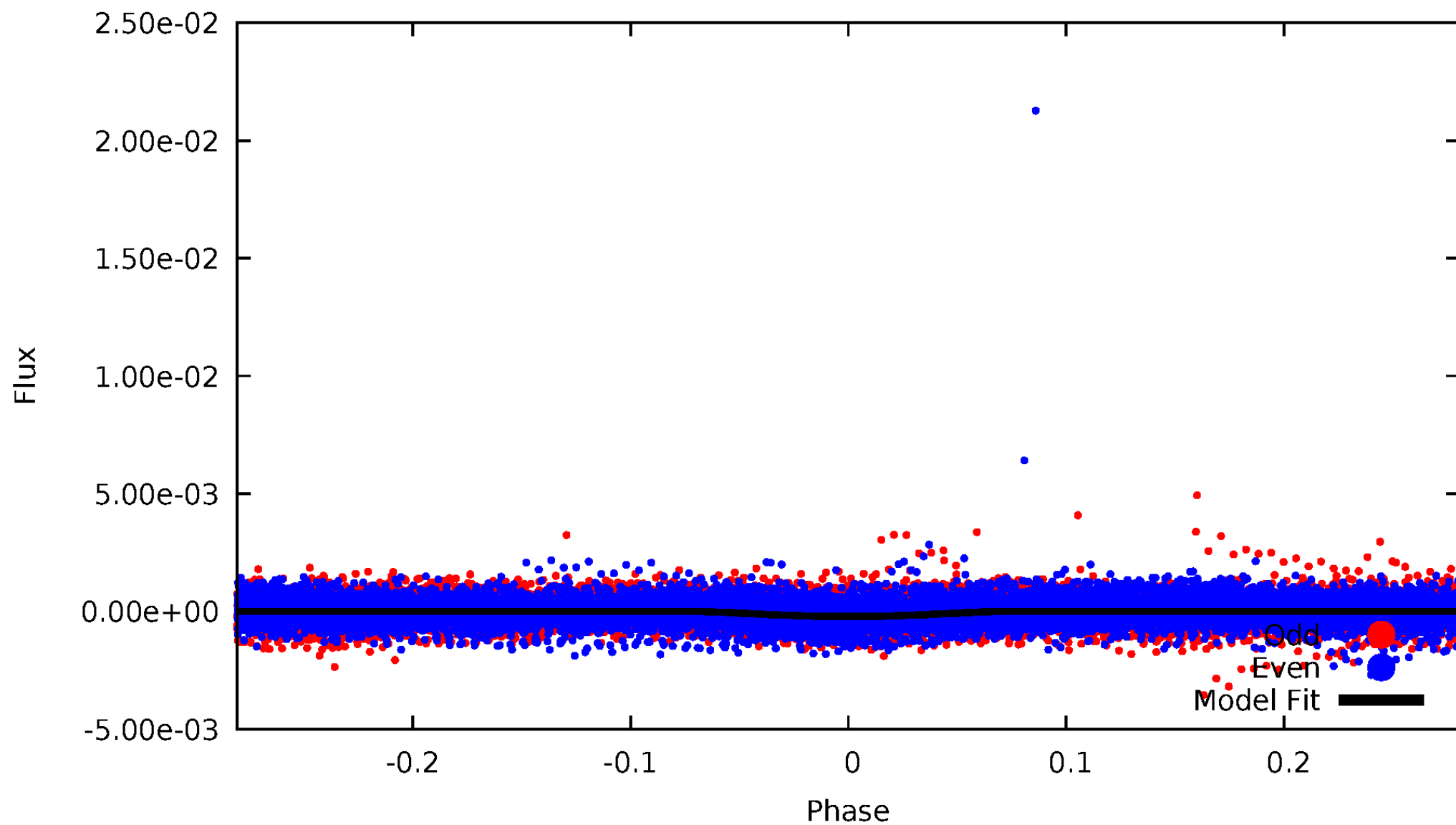


TCE 009602562-01



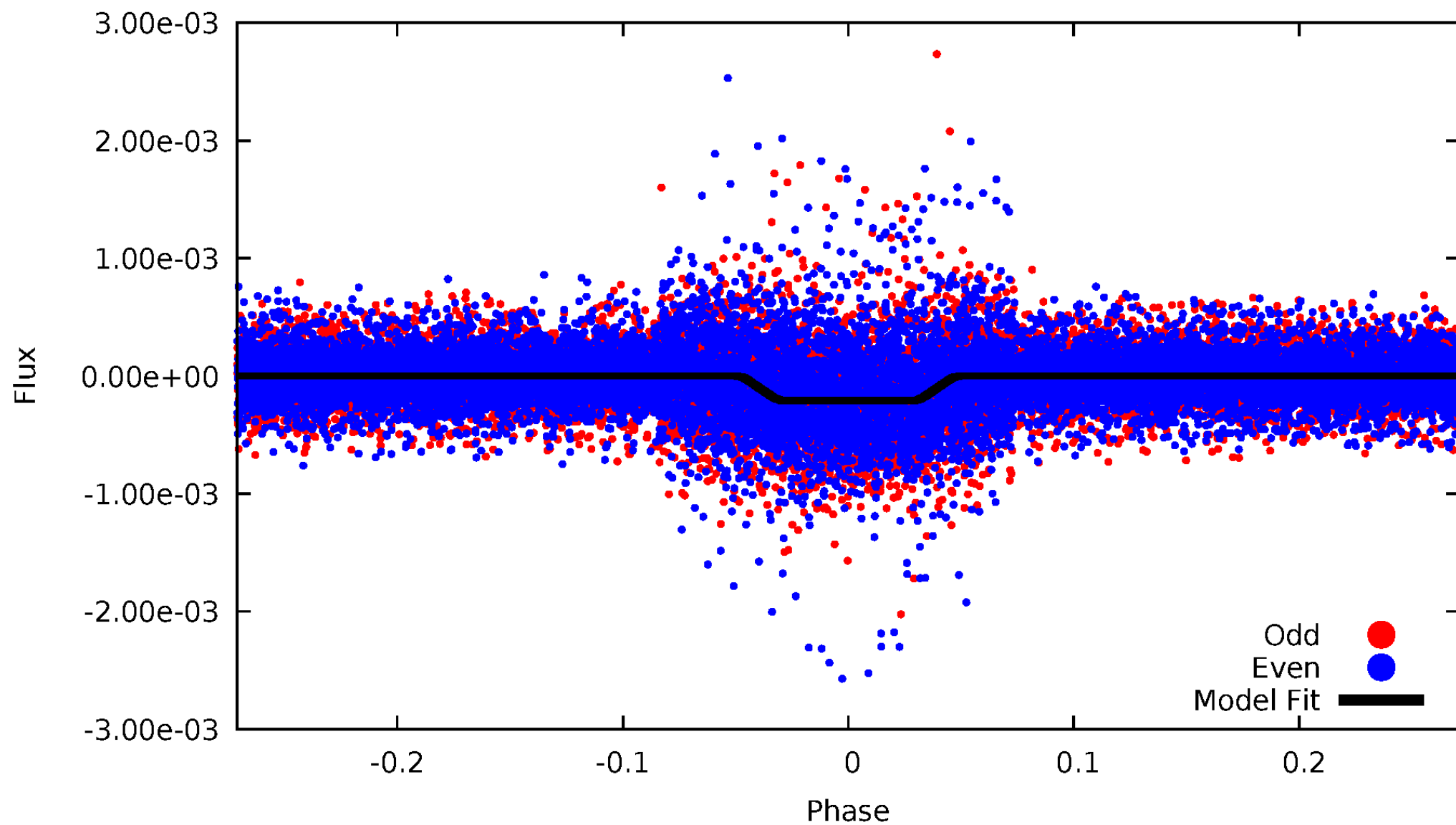
# DV Odd/Even

TCE 009602562-01



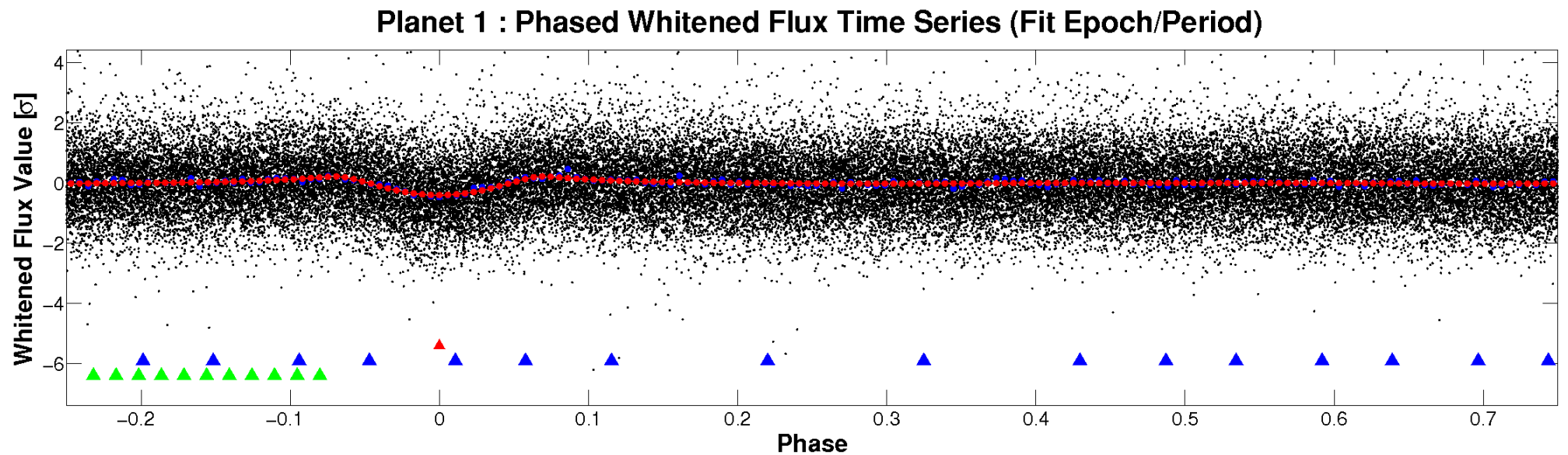
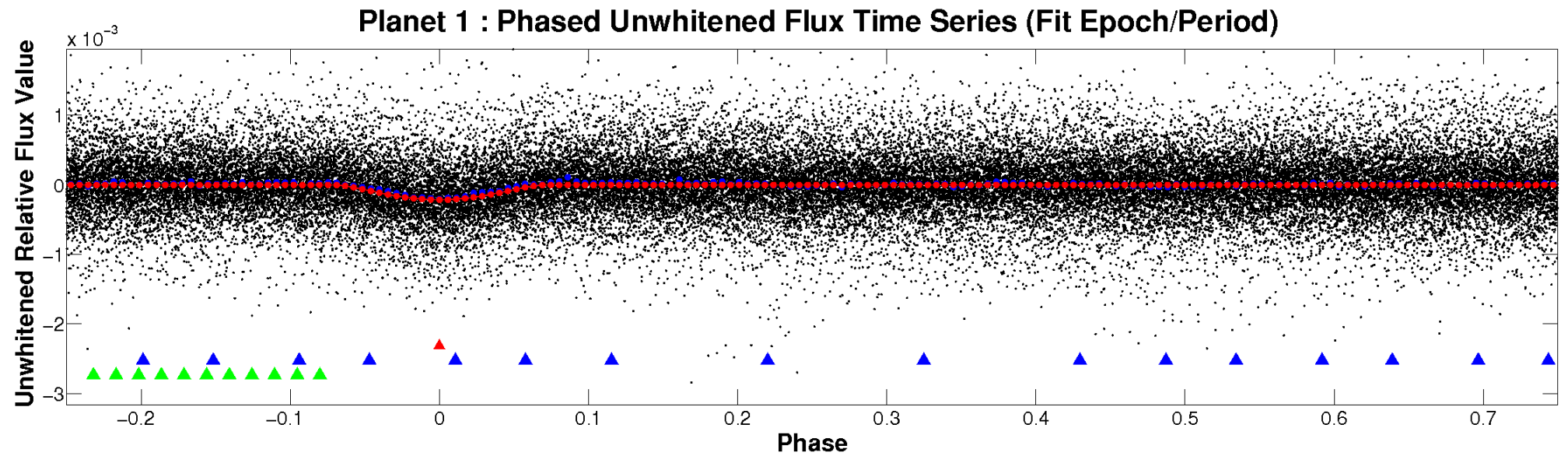
# ALT Odd/Even

TCE 009602562-01



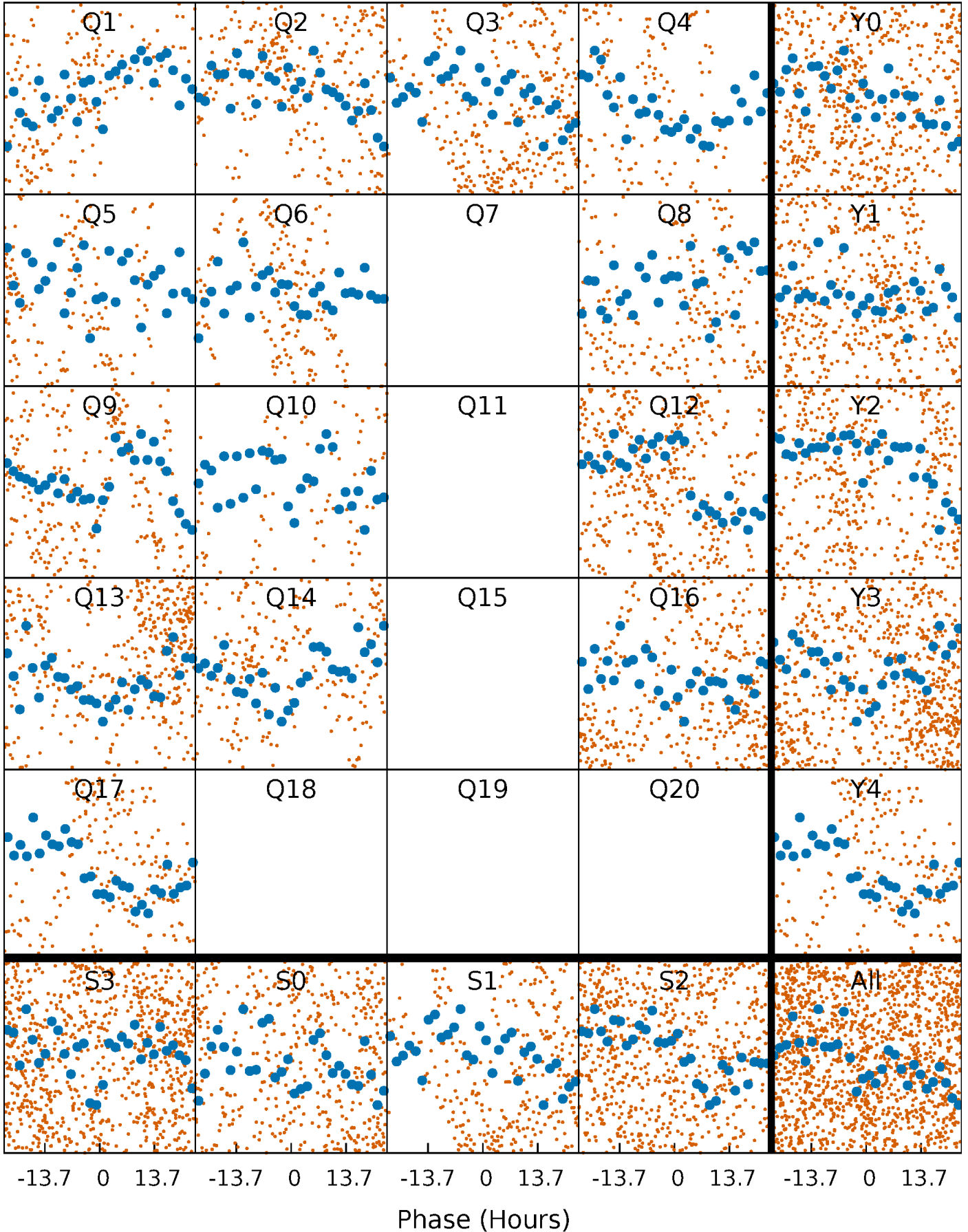


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

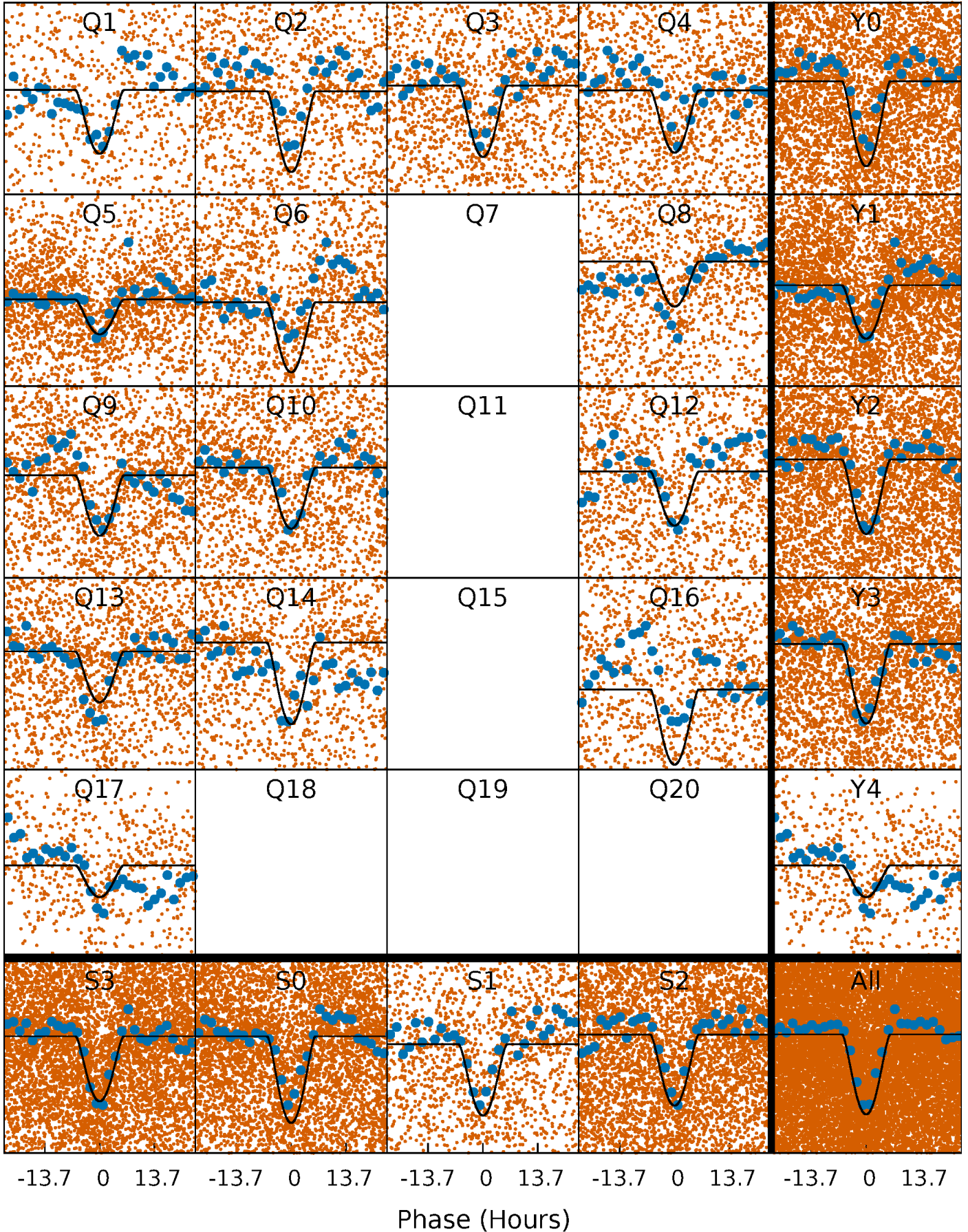
TCE 009602562-01   P= 3.556540 Days    $T_0=133.523782$  (BKJD)





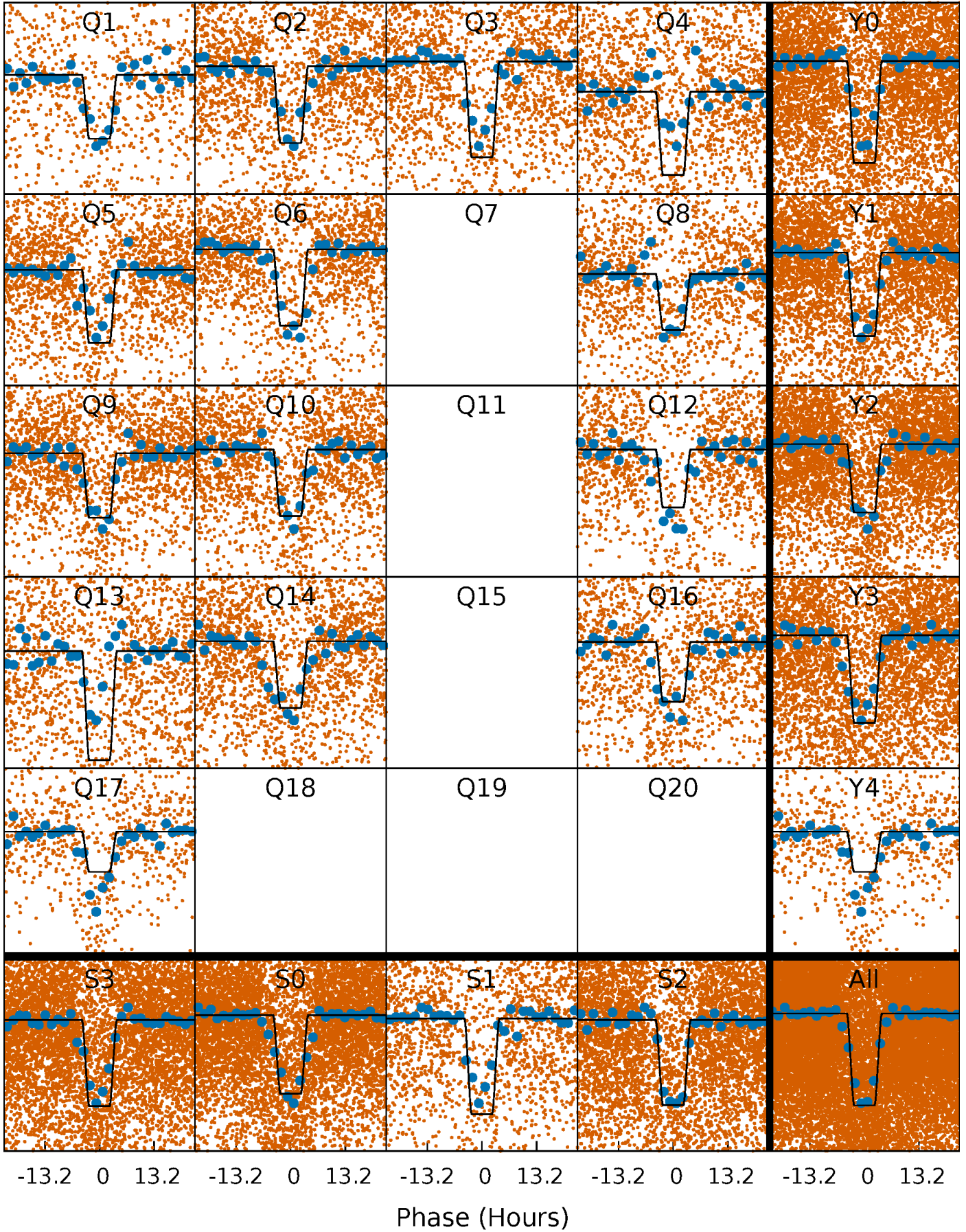
# DV Quarter-Phased Transit Curves

TCE 009602562-01 P= 3.556540 Days  $T_0=133.523782$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009602562-01 P= 3.556566 Days  $T_0=133.532340$  (BKJD)

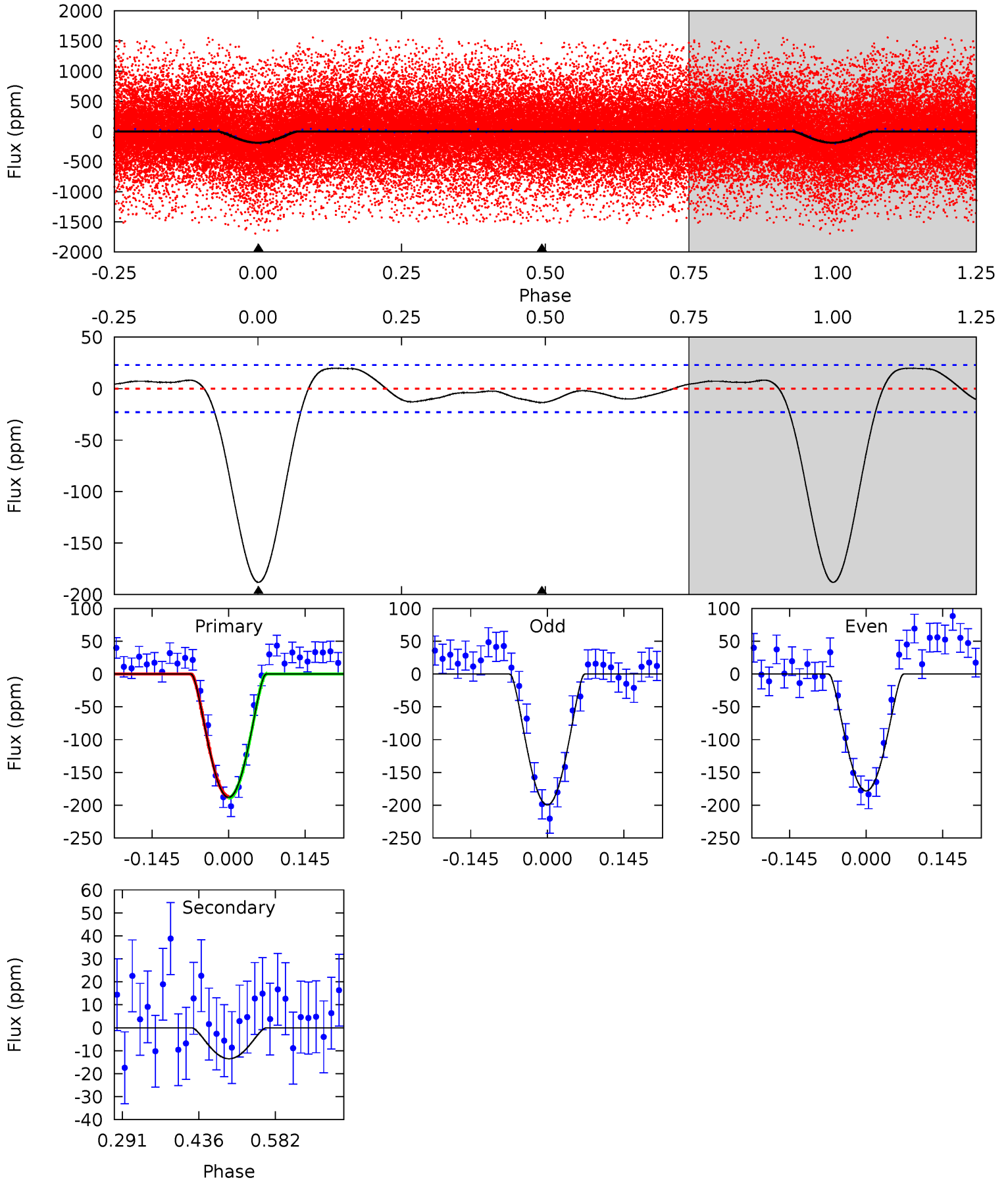




# DV Model-Shift Uniqueness Test

009602562-01, P = 3.556540 Days, E = 129.967242 Days

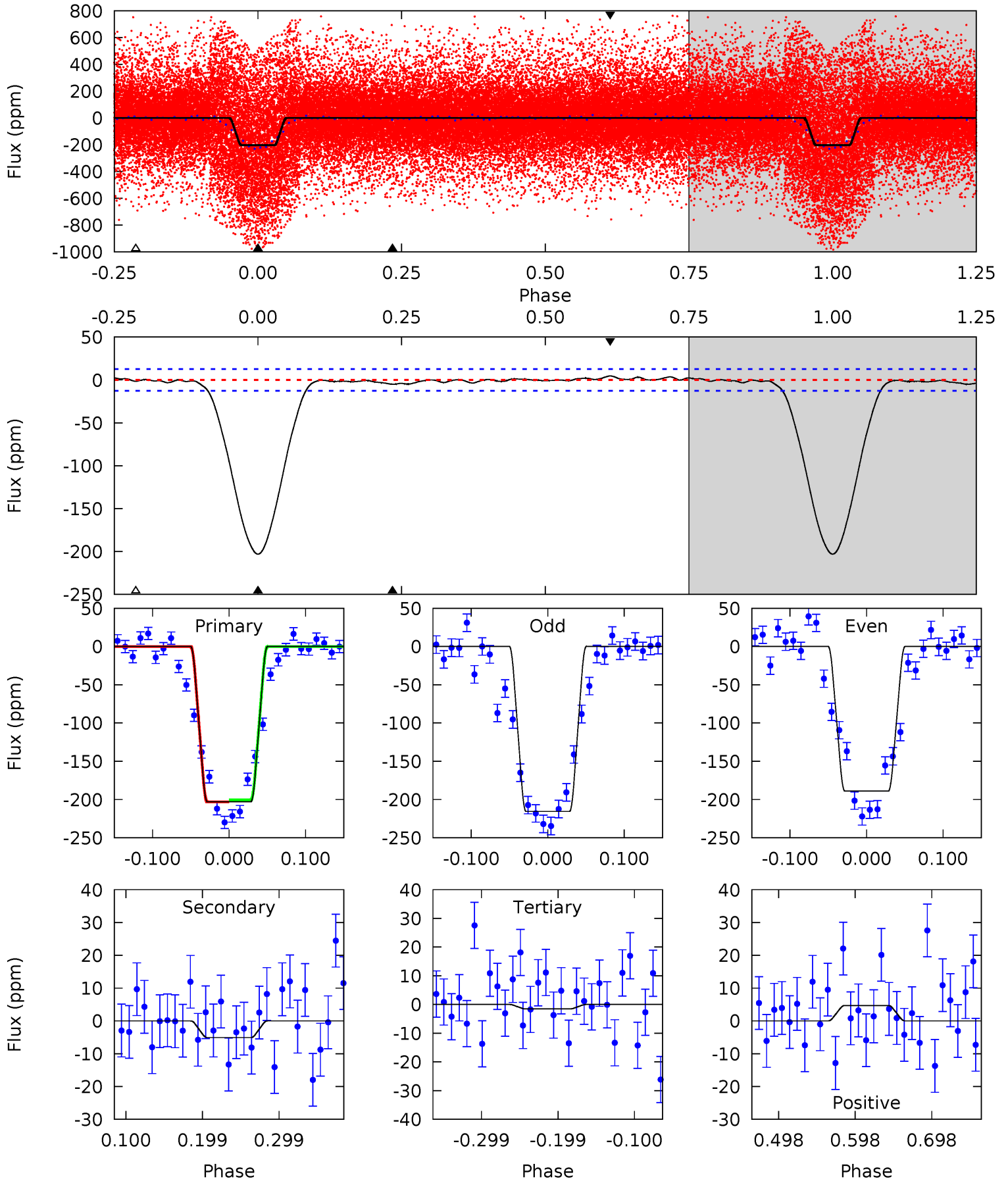
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.8	2.64	0	0	4.49	1.46	1.83	36.8	36.8	2.64	2.64	2.11	0.69	0.10	0.24



# Alt Model-Shift Uniqueness Test

009602562-01, P = 3.556566 Days, E = 129.975774 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
73.0	1.83	0.56	1.69	4.57	1.65	0.59	72.4	71.3	1.27	0.14	4.77	0.81	0.02	0.50



### Stellar Parameters For KIC 009602562

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5950^{+166}_{-208}$	$4.395^{+0.087}_{-0.203}$	$0.240^{+0.150}_{-0.300}$	$1.114^{+0.353}_{-0.141}$	$1.126^{+0.136}_{-0.149}$	$1.148^{+0.419}_{-0.594}$
	+3%/-3%	+2%/-5%	+62%/-125%	+32%/-13%	+12%/-13%	+37%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 009602562-01 / KOI 3985.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-13 \pm 5$	$3.77^{+2.69}_{-2.24}$	$1796^{+138}_{-93}$	$2715^{+944}_{-847}$	$1.127^{+5.873}_{-0.793}$
Alt.	$-5 \pm 3$	$2.74^{+2.44}_{-1.80}$	$1799^{+122}_{-100}$	$2453^{+1083}_{-4669}$	$0.700^{+5.382}_{-0.546}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$



## DV Centroid Data

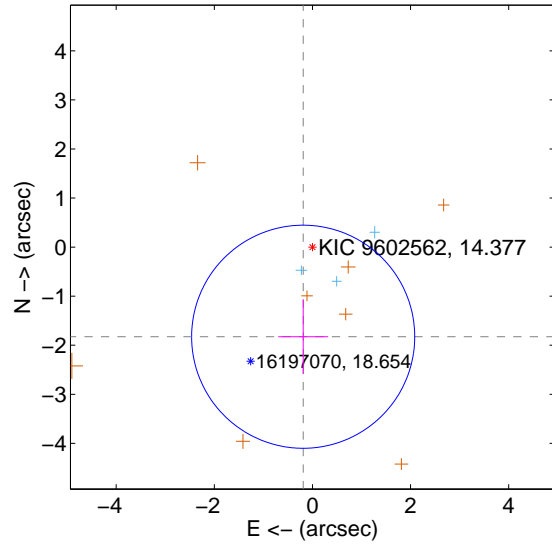
Supplemental centroid analysis for 009602562-01. Kepler magnitude: 14.38. Transit SNR 23.29

There are 3 quarters with good PRF difference image offsets

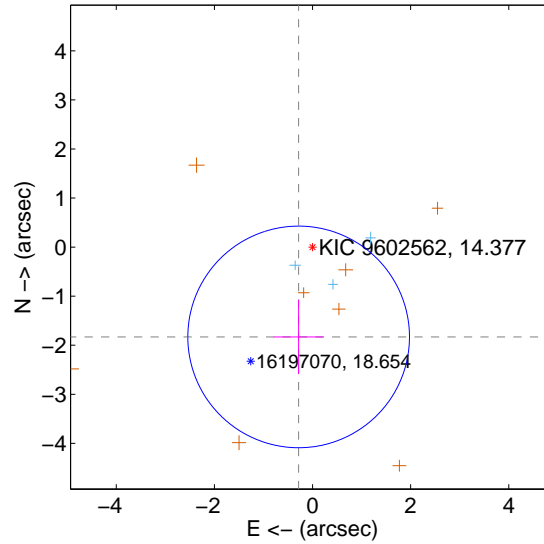
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.836 \pm 0.758$	2.42	$0.189 \pm 0.509$	$-1.827 \pm 0.760$
PRF-fit source offset from KIC position	$1.852 \pm 0.753$	2.46	$0.283 \pm 0.510$	$-1.830 \pm 0.757$
photometric centroid source offset	$0.47 \pm 0.34$	1.41	$-0.43 \pm 0.33$	$-0.19 \pm 0.36$

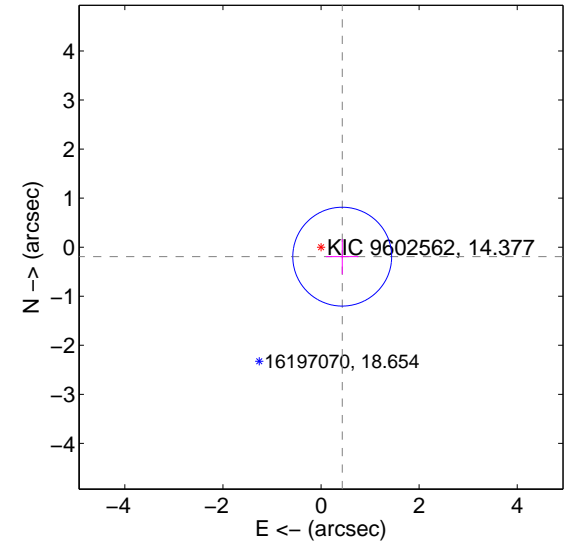
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

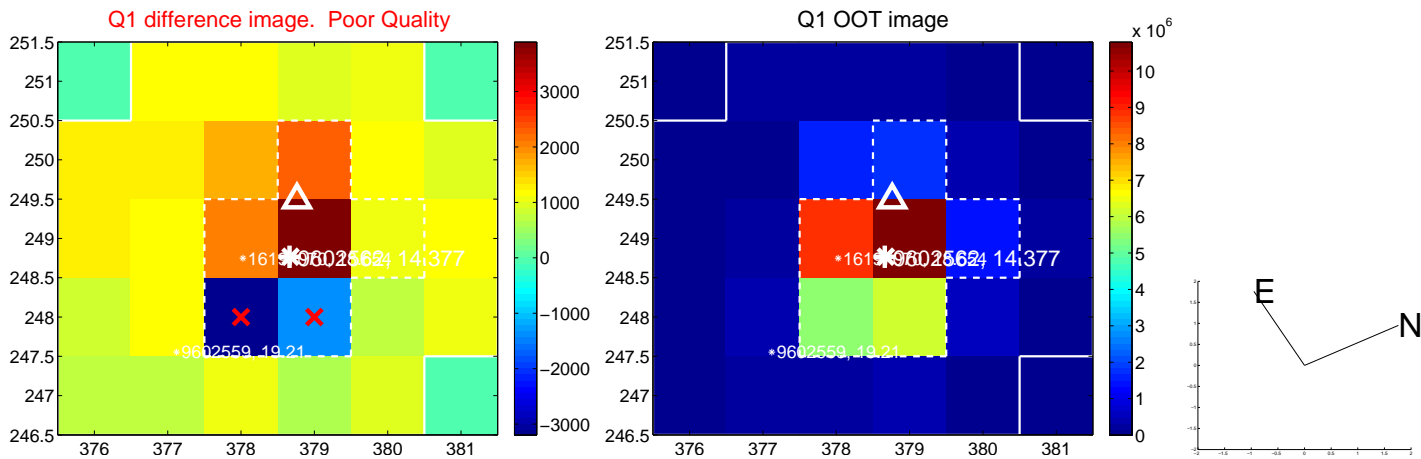


offset from photometric centroids



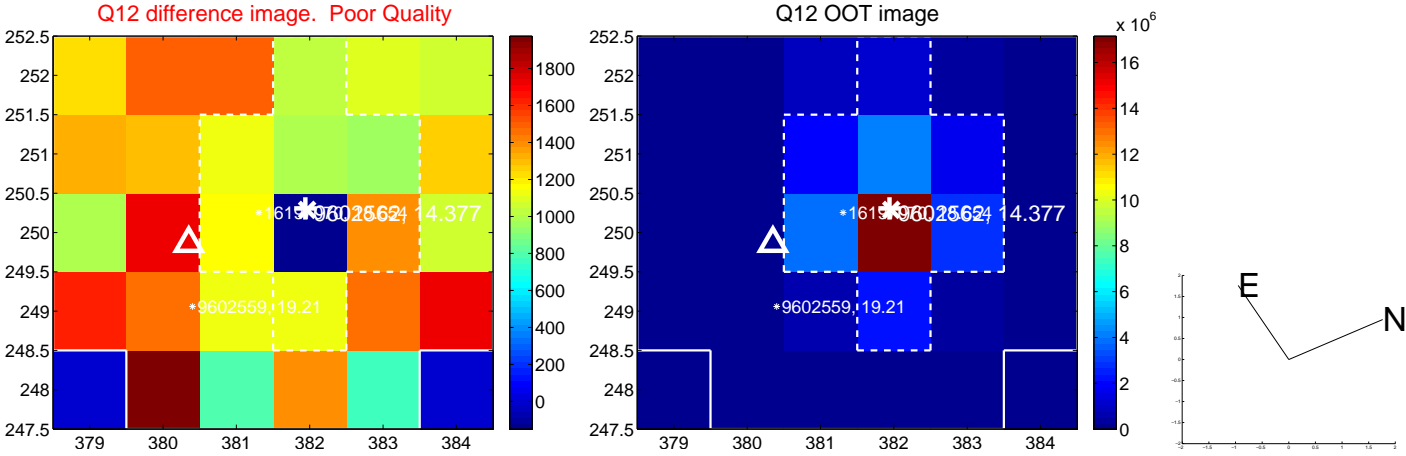
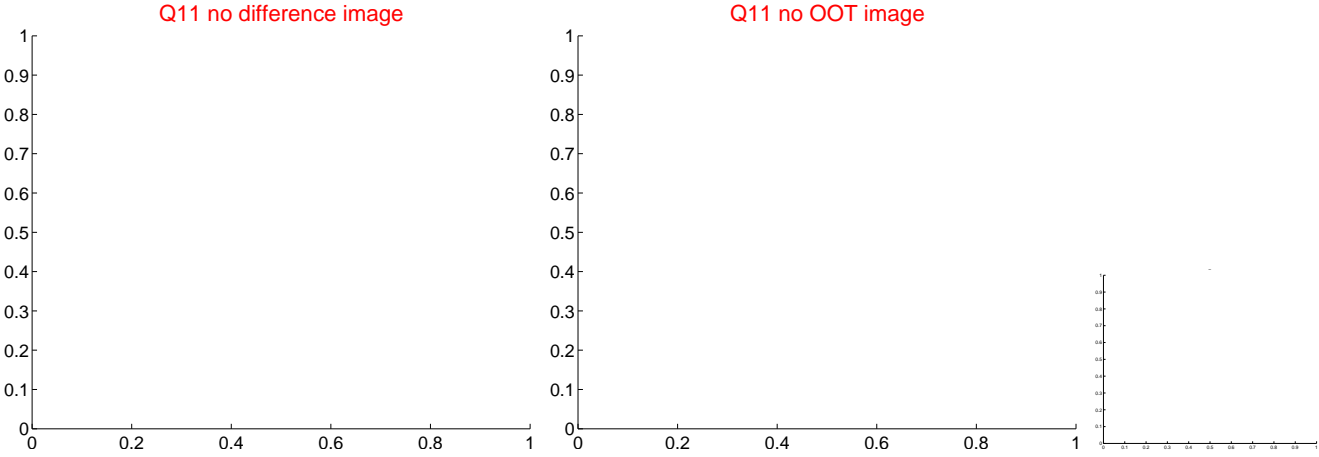
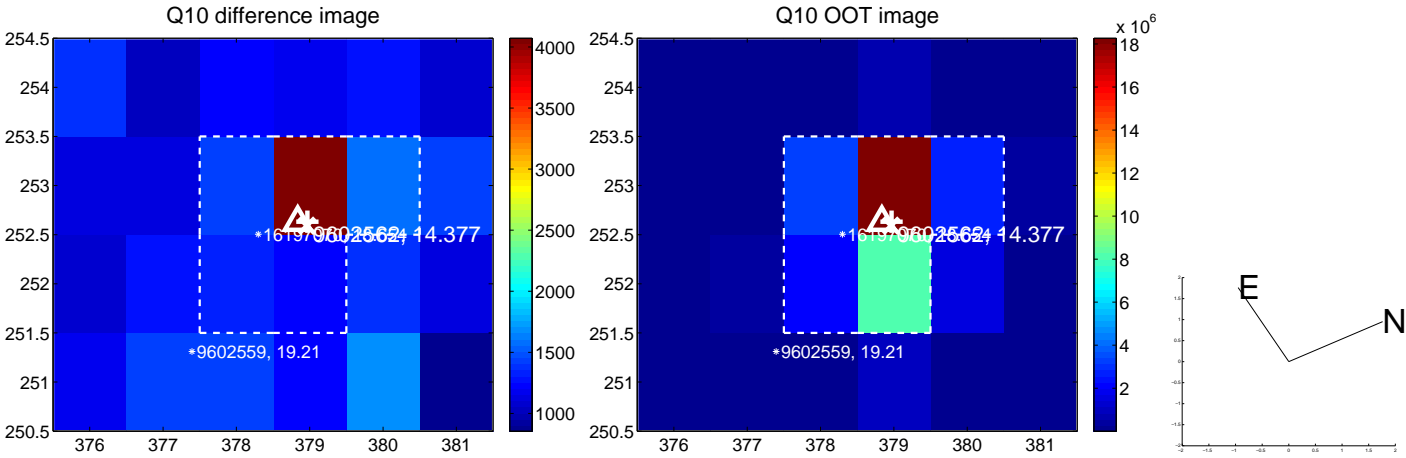
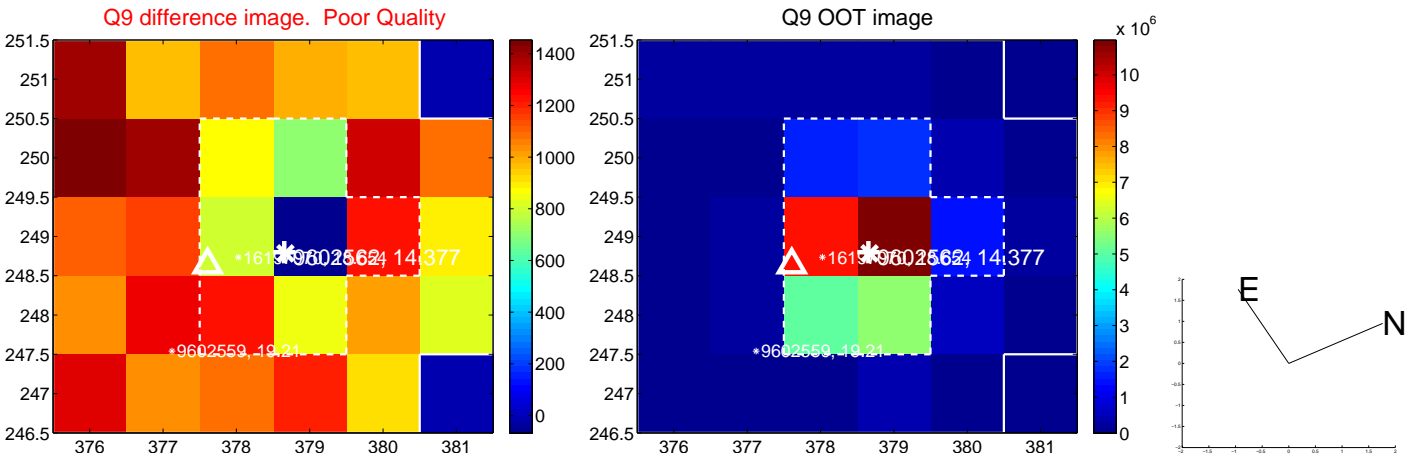
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

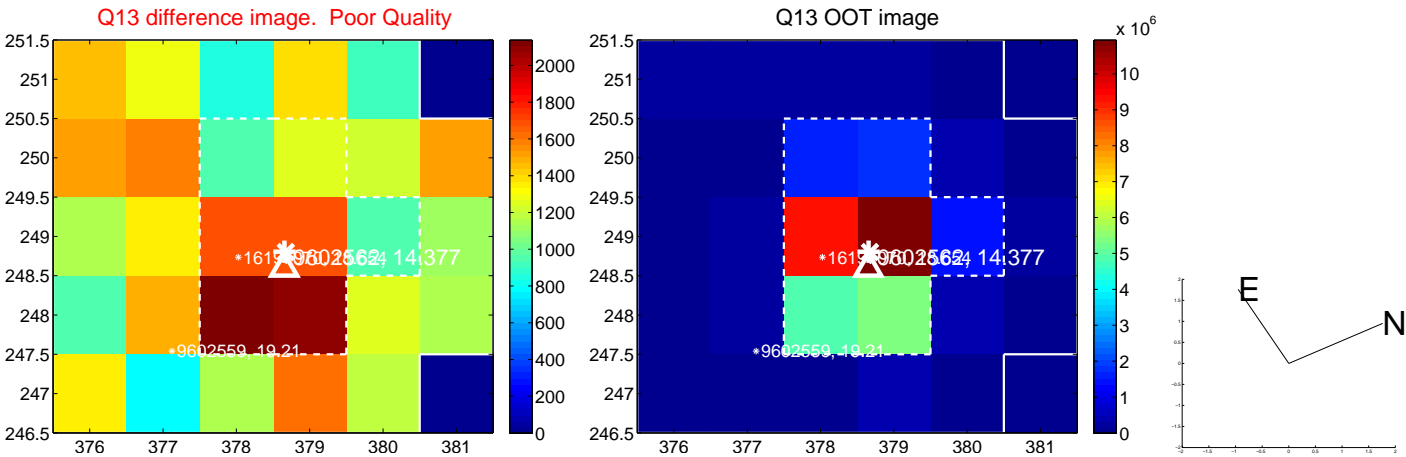




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

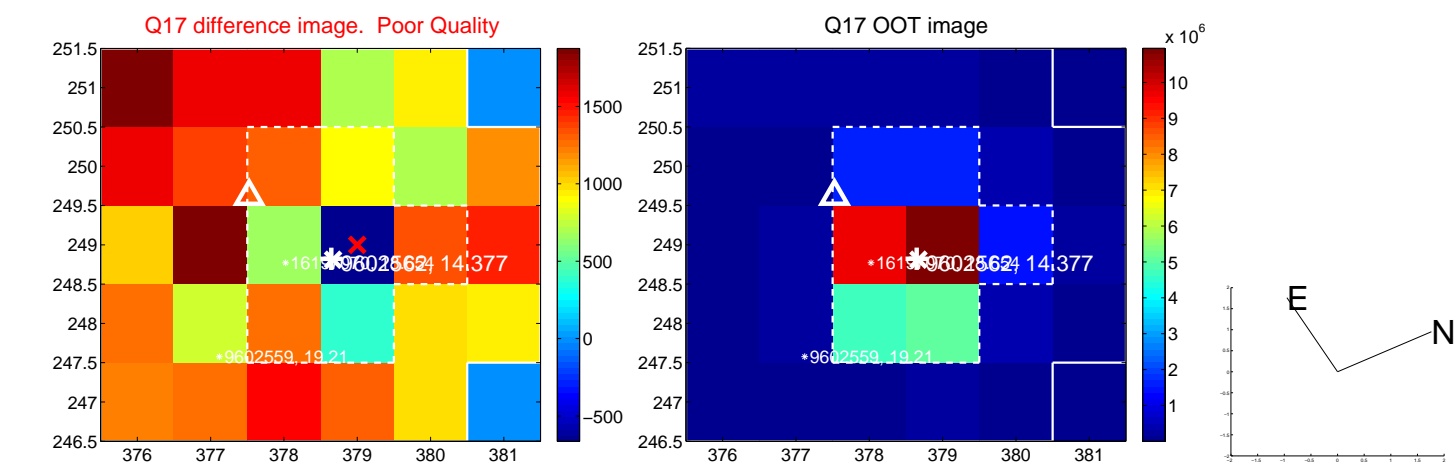


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

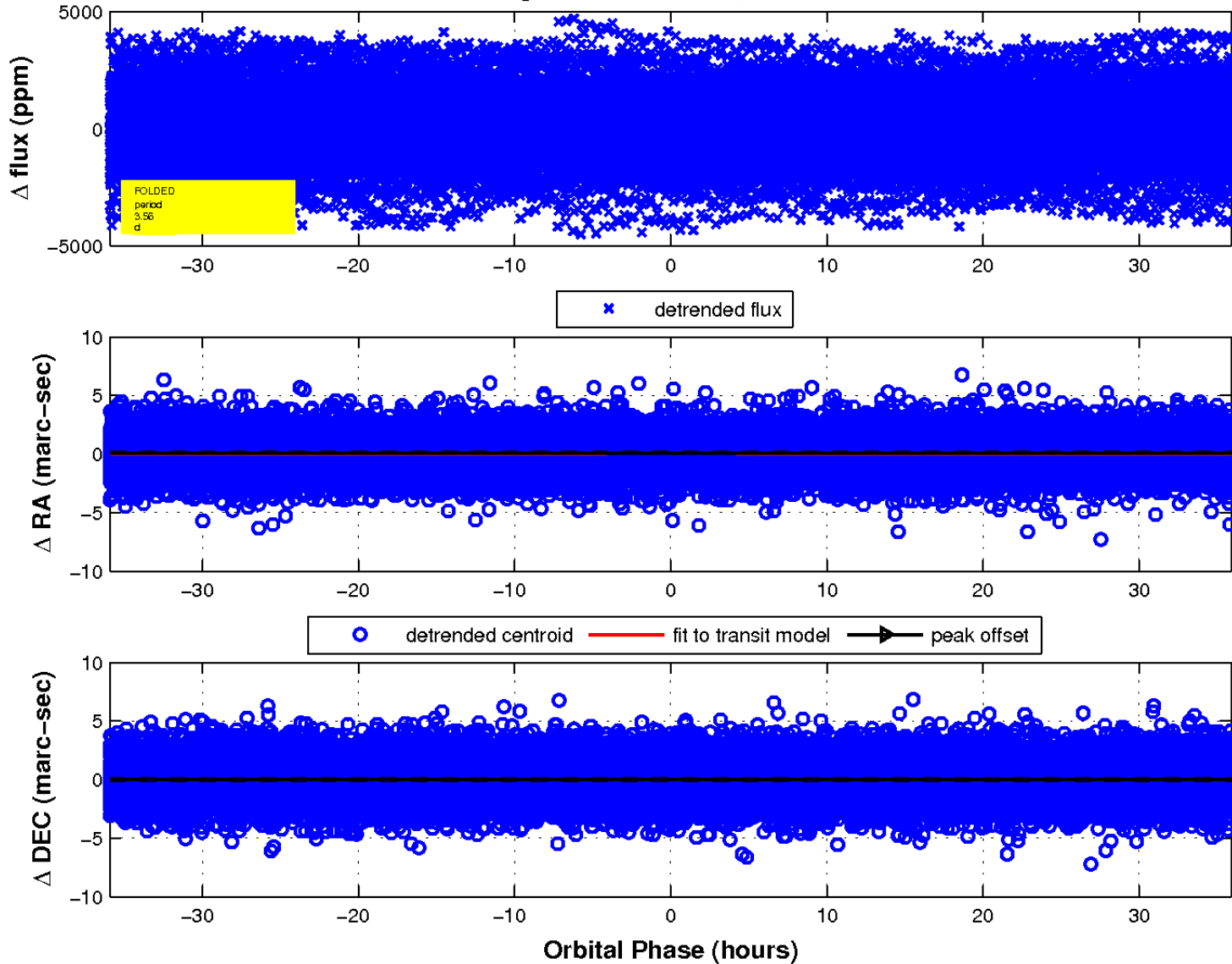




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

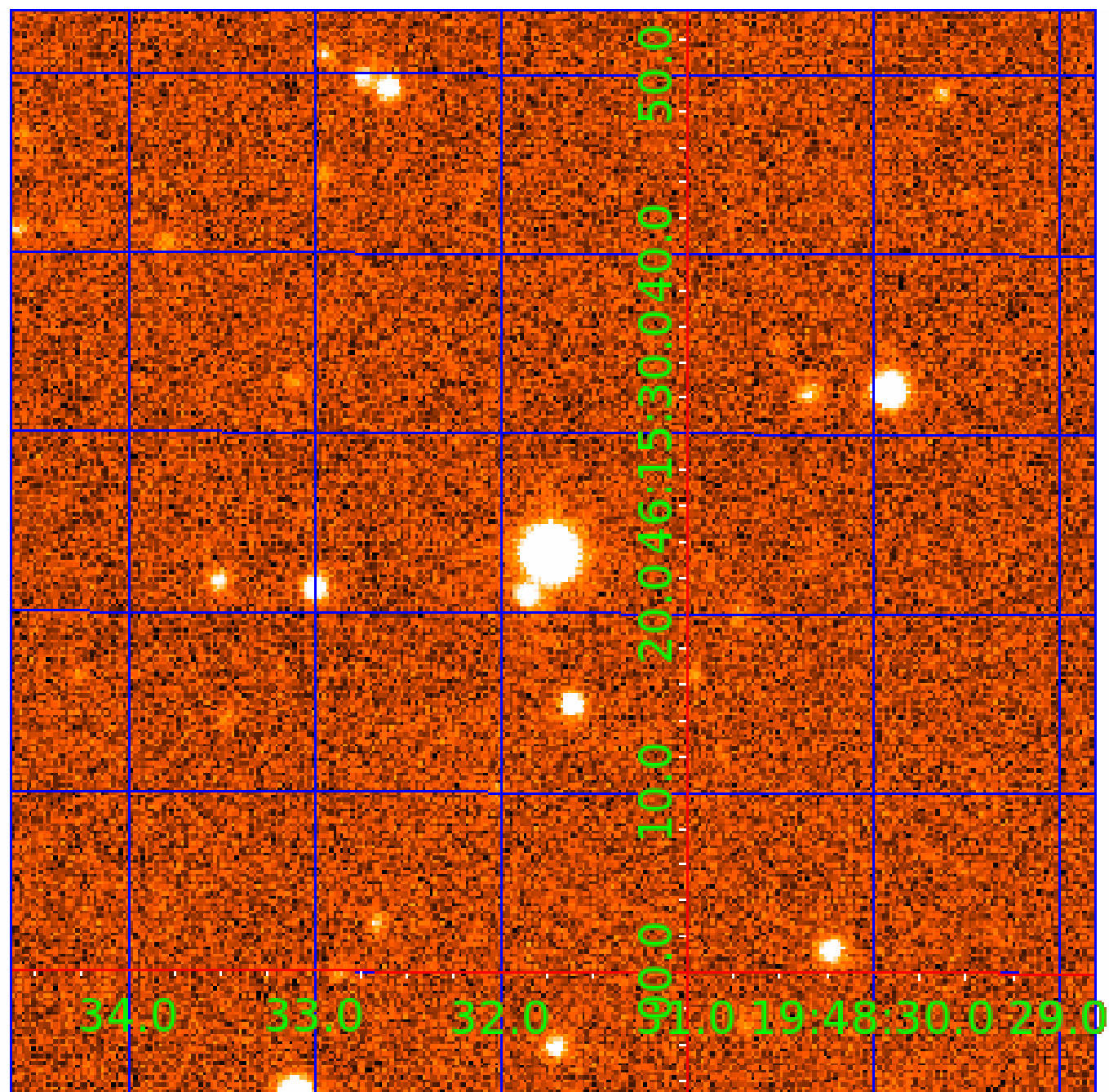


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



# KIC 009602562

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009602562-01	OBS	3985.01	3.556540	133.523782	213.3	11.973	20.4	23.3	1.11	5950	3.30	619.70
009602562-02	OBS	No	92.097653	169.294628	566.2	18.964	16.1	7.1	1.11	5950	3.57	8.09
009602562-03	OBS	No	131.537964	197.256527	135.7	73.411	13.5	2.0	1.11	5950	1.31	5.03

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009602562-01	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH
009602562-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009602562-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

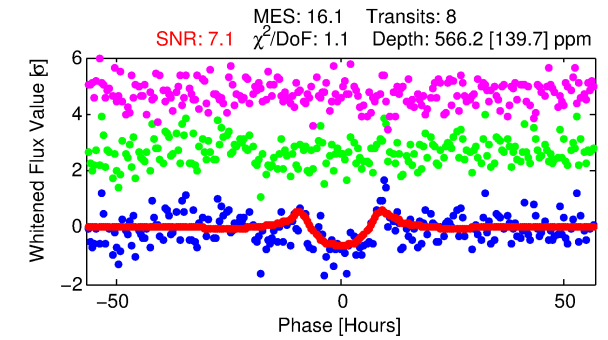
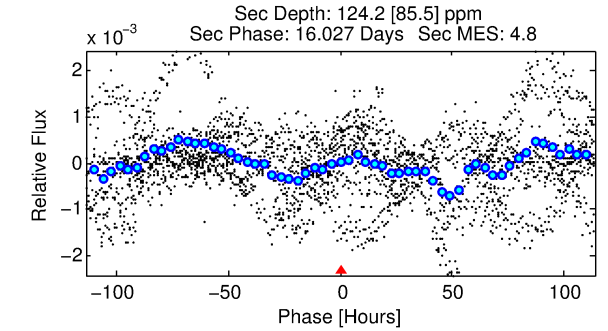
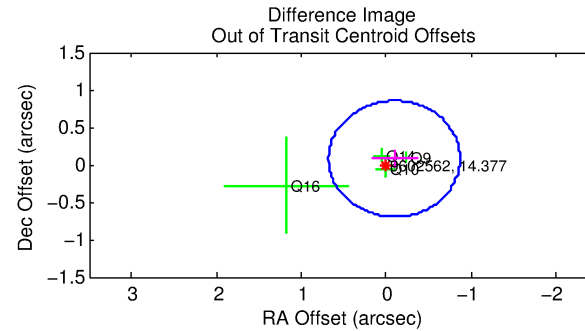
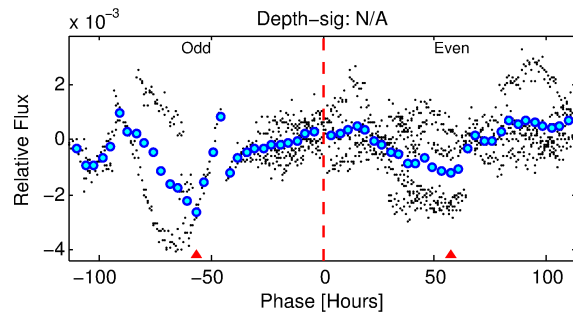
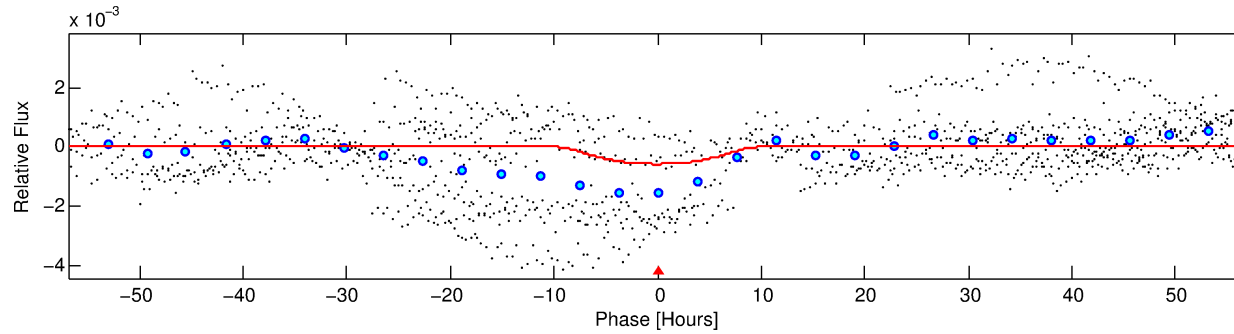
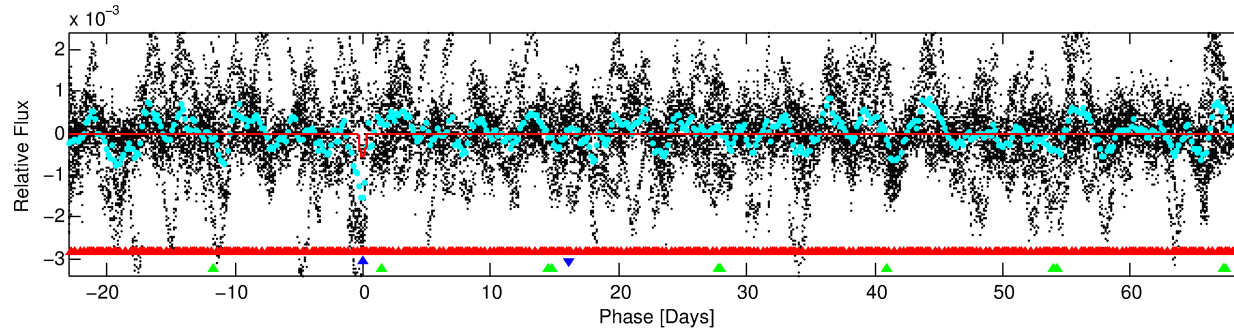
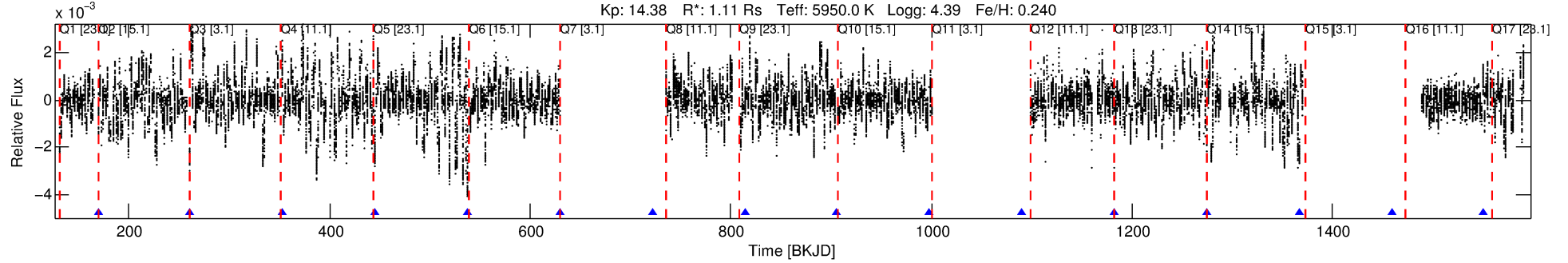
Ephemeris Match Information For 009602562-02

No Significant Match Found

# DV One-Page Summary

KIC: 9602562 Candidate: 2 of 3 Period: 92.098 d  
KOI: K03985 Corr: No Ephemeris Match

Kp: 14.38 R\*: 1.11 Rs Teff: 5950.0 K Logg: 4.39 Fe/H: 0.240



## DV Fit Results:

Period = 92.09765 [0.00452] d  
Epoch = 169.2946 [0.0443] BKJD  
Rp/R\* = 0.0294 [0.0055]  
a/R\* = 12.62 [2.14]  
b = 0.97 [0.02]  
Seff = 8.09 [3.25]  
Teq = 430 [43] K  
Rp = 3.57 [1.31] Re  
a = 0.4151 [0.1090] AU  
Ag = 922.84 [800.98] [1.15σ]  
Teffp = 3665 [728] K [4.44σ]

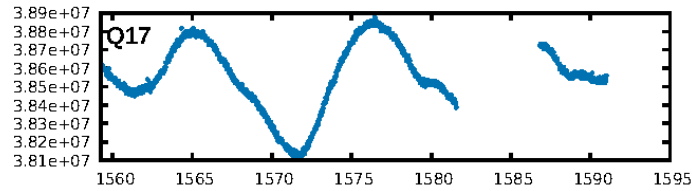
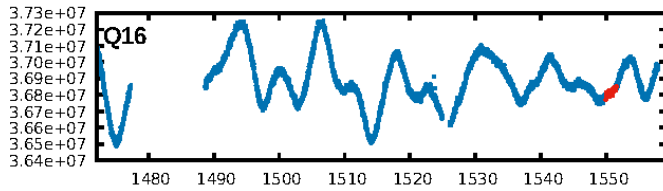
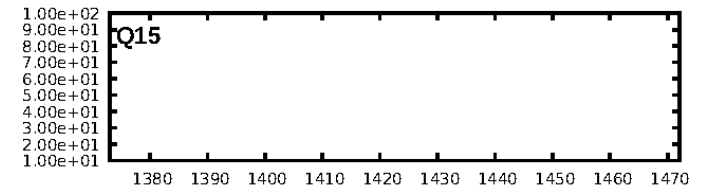
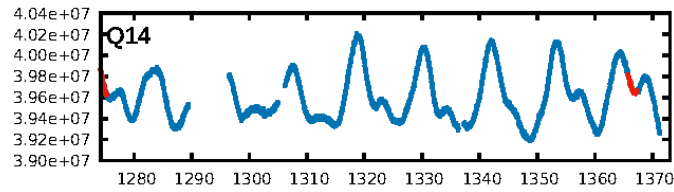
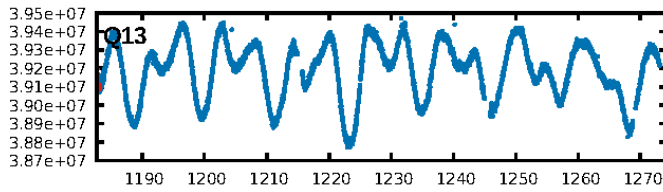
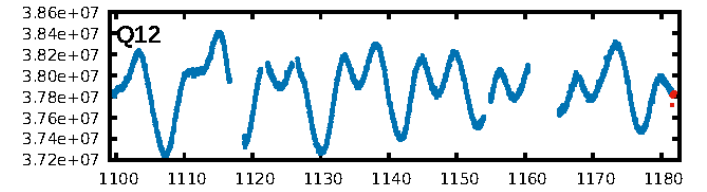
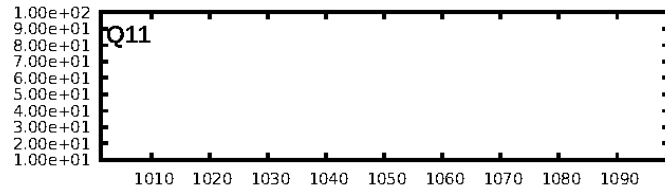
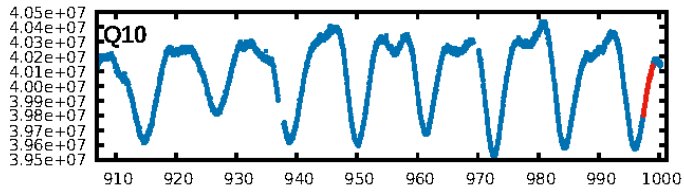
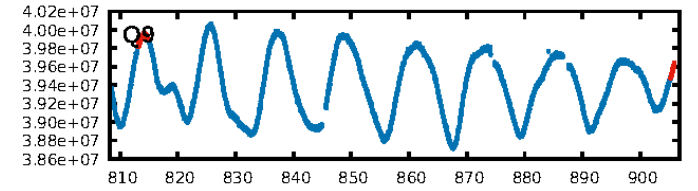
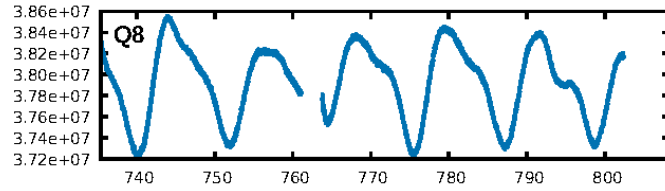
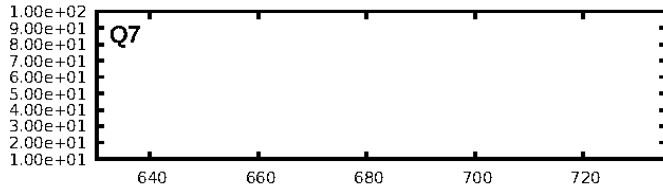
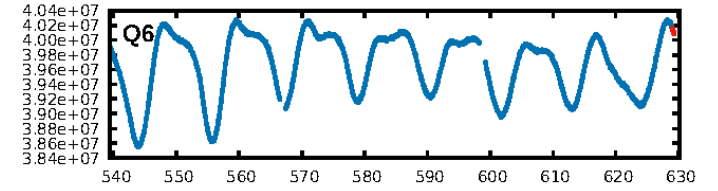
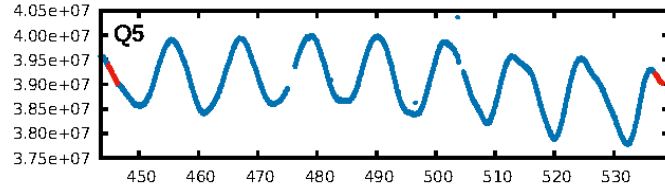
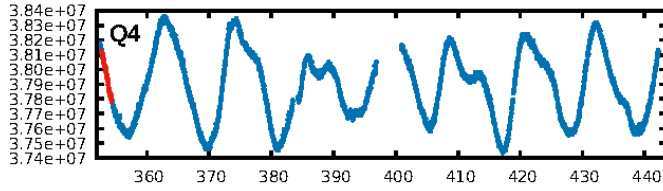
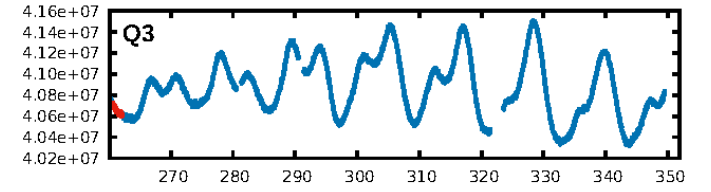
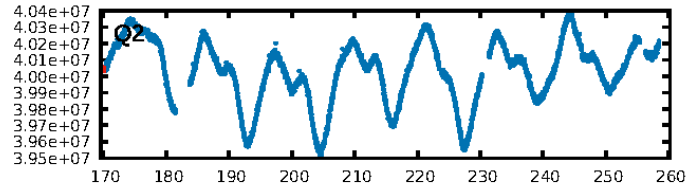
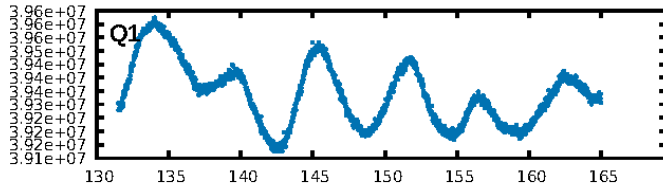
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [94.75σ]  
LongPeriod-sig: 100.0% [12.48σ]  
ModelChiSquare2-sig: 15.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.01e-24  
RollingBand-fgt: 1.00 [8/8]  
**GhostDiagnostic-chr: 1.936**  
Centroid-sig: 3.2%  
Centroid-so: 0.975 arcsec [1.52σ]  
OotOffset-rm: 0.126 arcsec [0.49σ]  
KicOffset-rm: 0.102 arcsec [0.57σ]  
OotOffset-st: 2/0/1/1 [4]  
KicOffset-st: 2/0/1/1 [4]  
DiffImageQuality-fgm: 0.50 [2/4]  
DiffImageOverlap-fno: 0.25 [1/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:34:37 Z

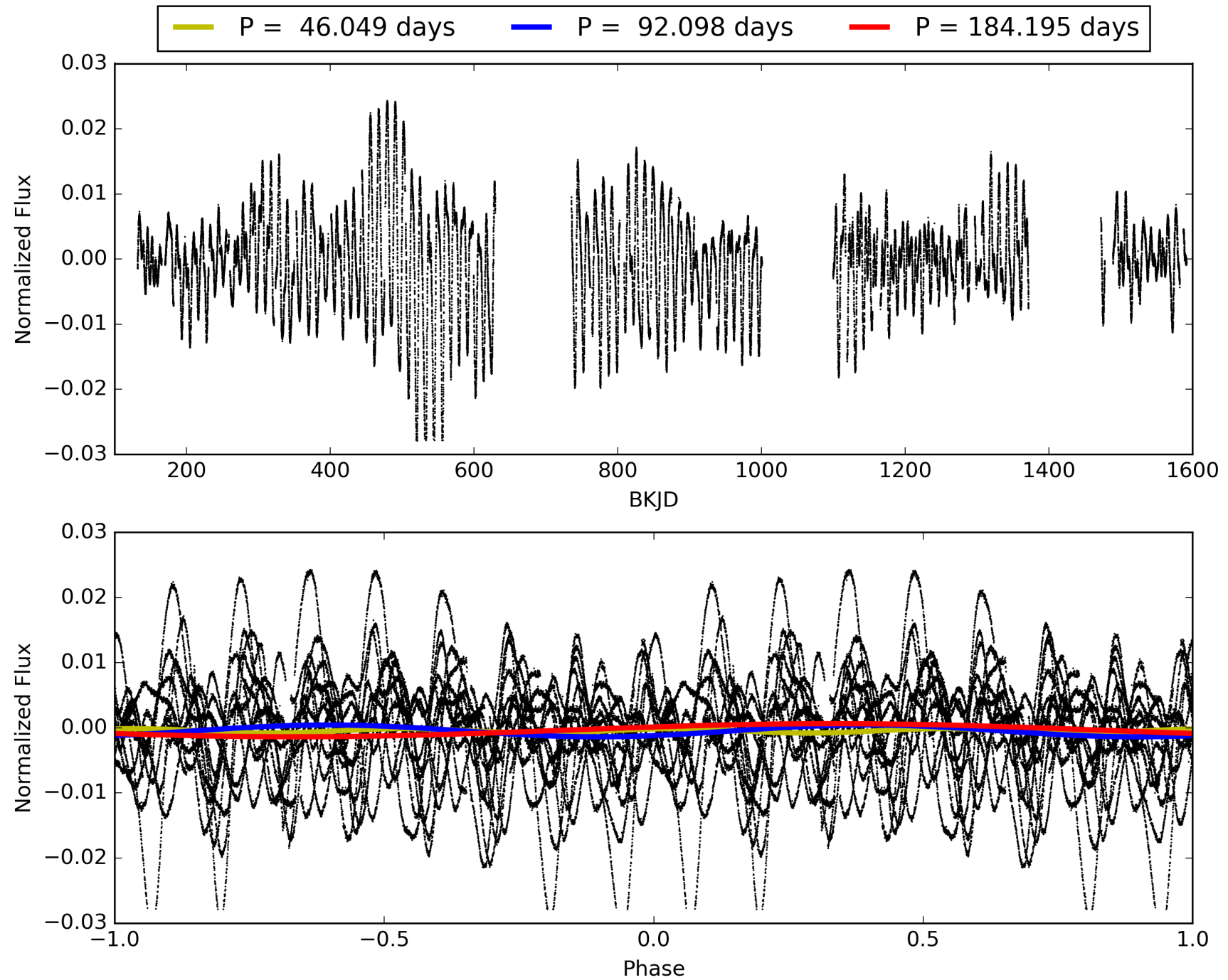
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009602562-02, PDC Light Curves



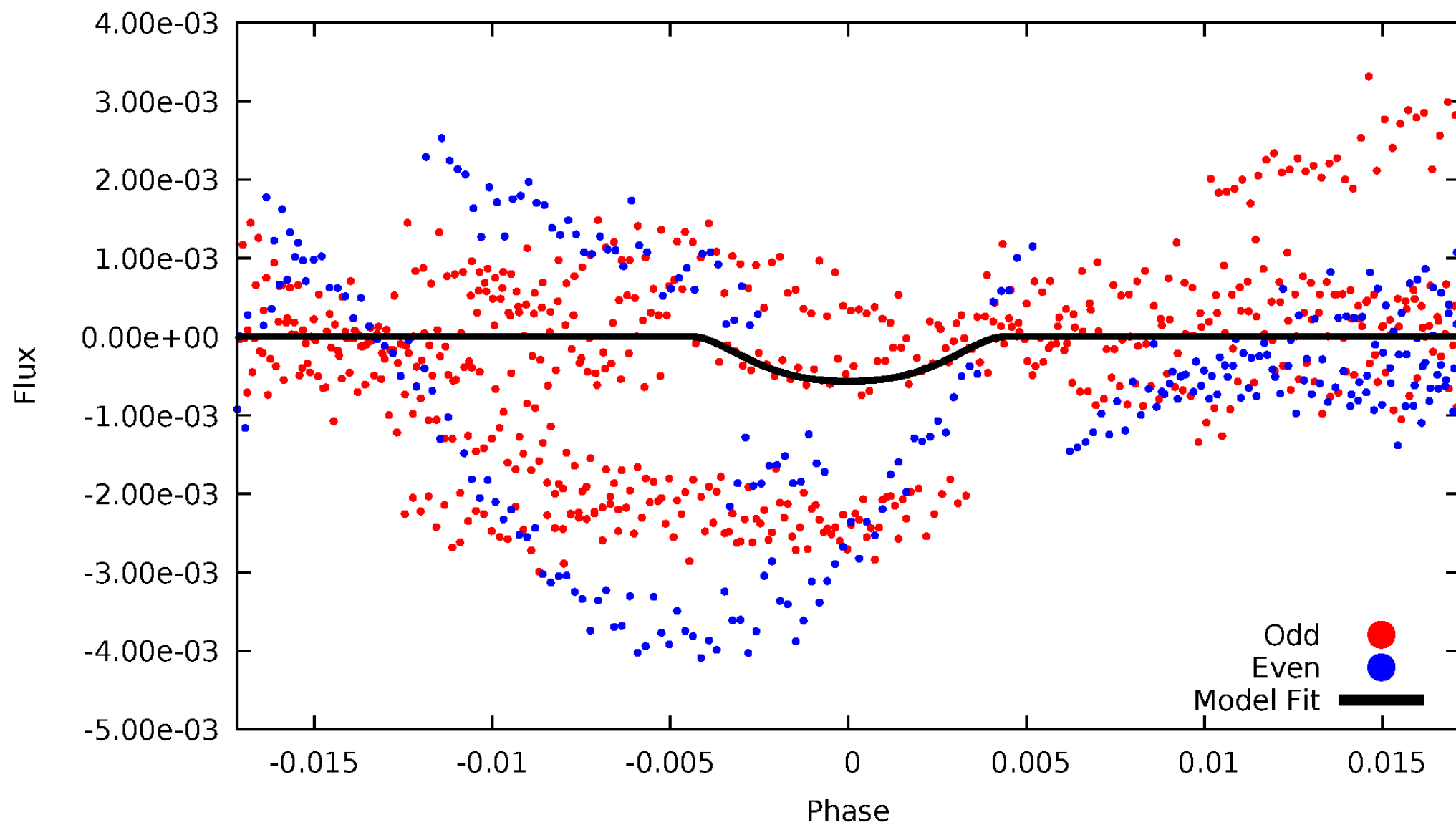


TCE 009602562-02



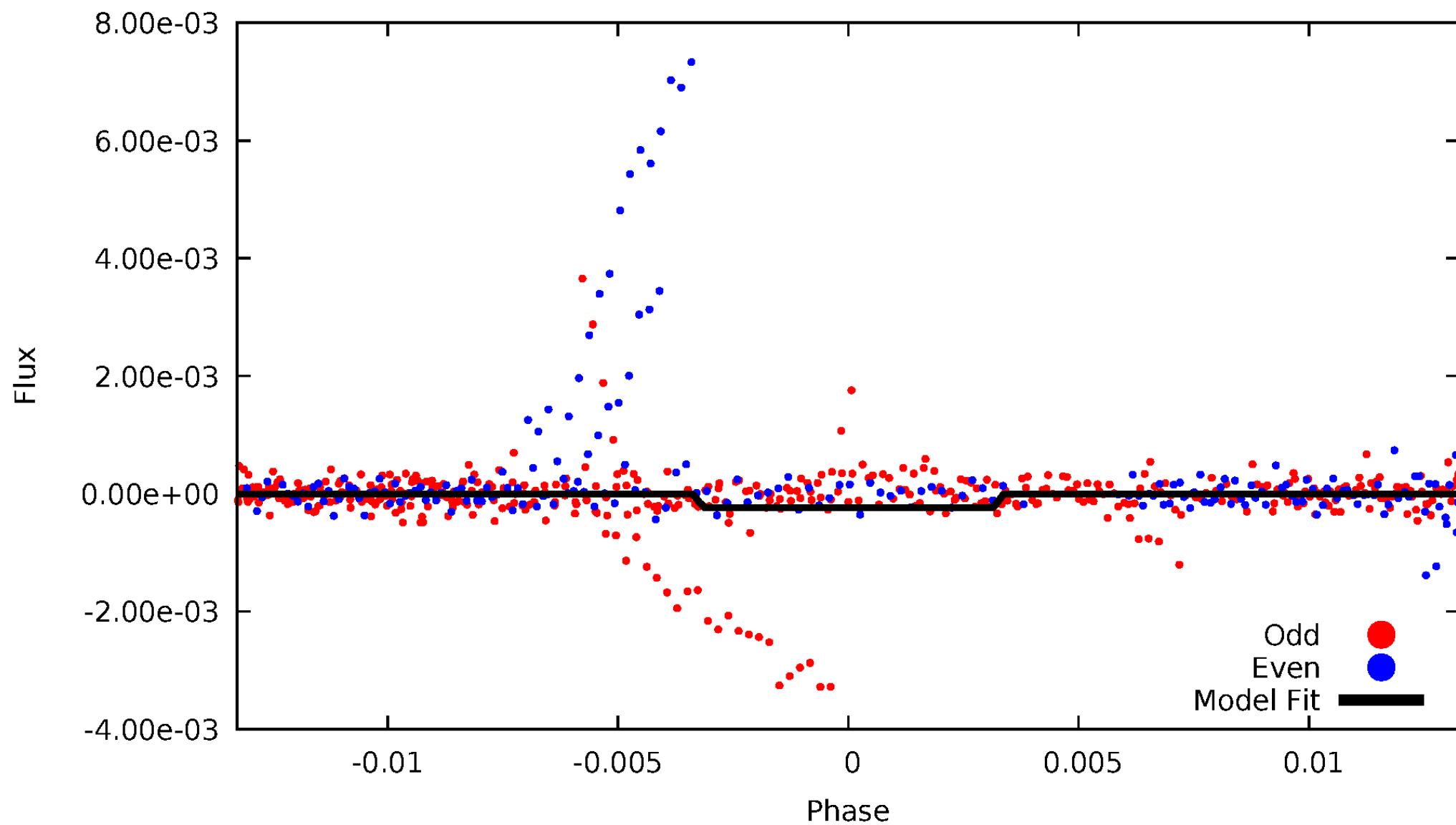
DV Odd/Even

TCE 009602562-02



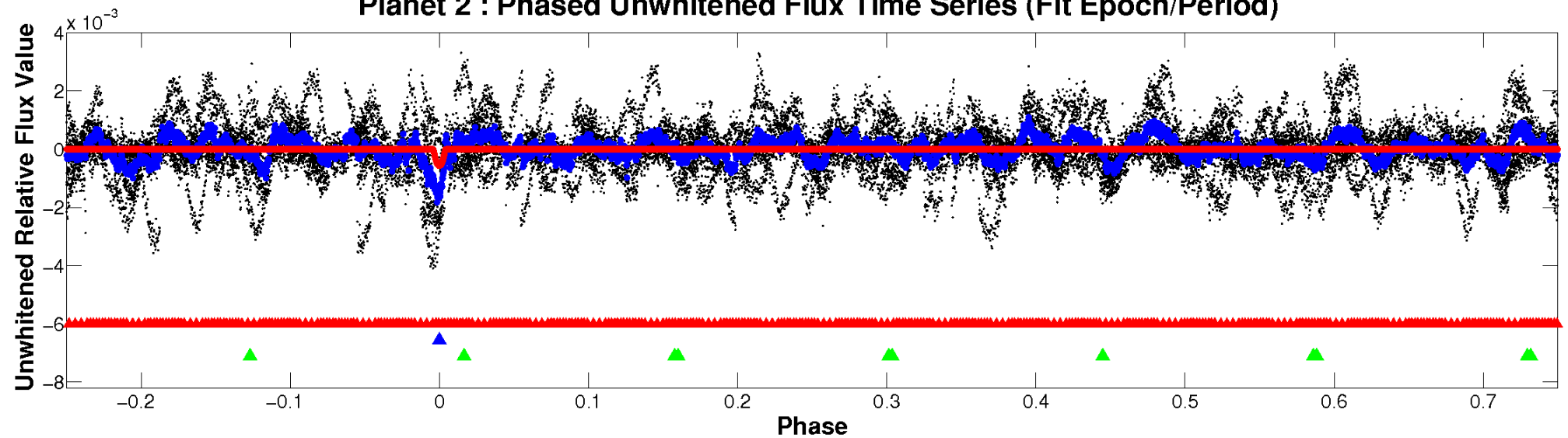
# ALT Odd/Even

TCE 009602562-02

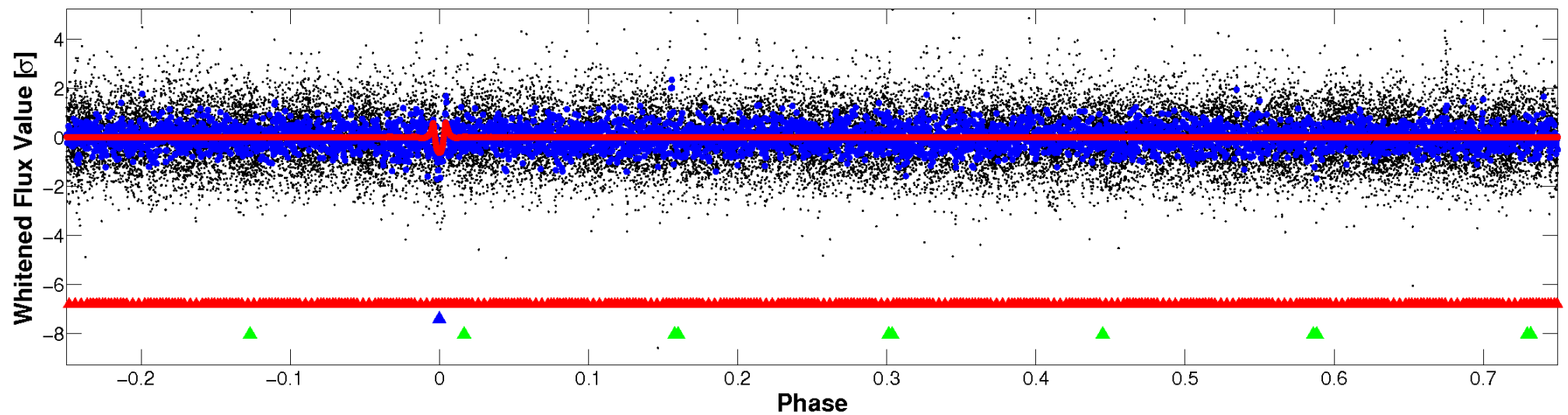


# Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

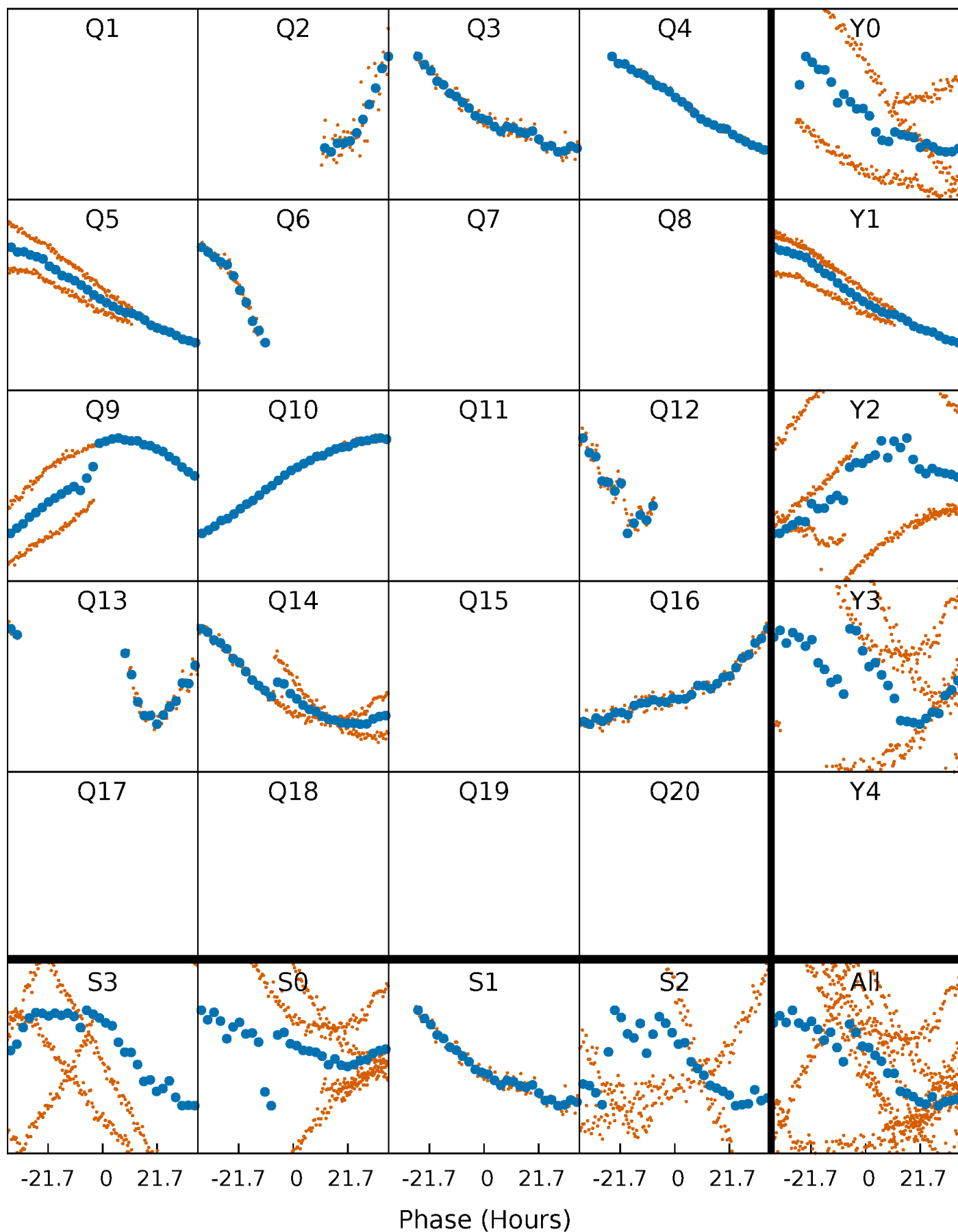


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

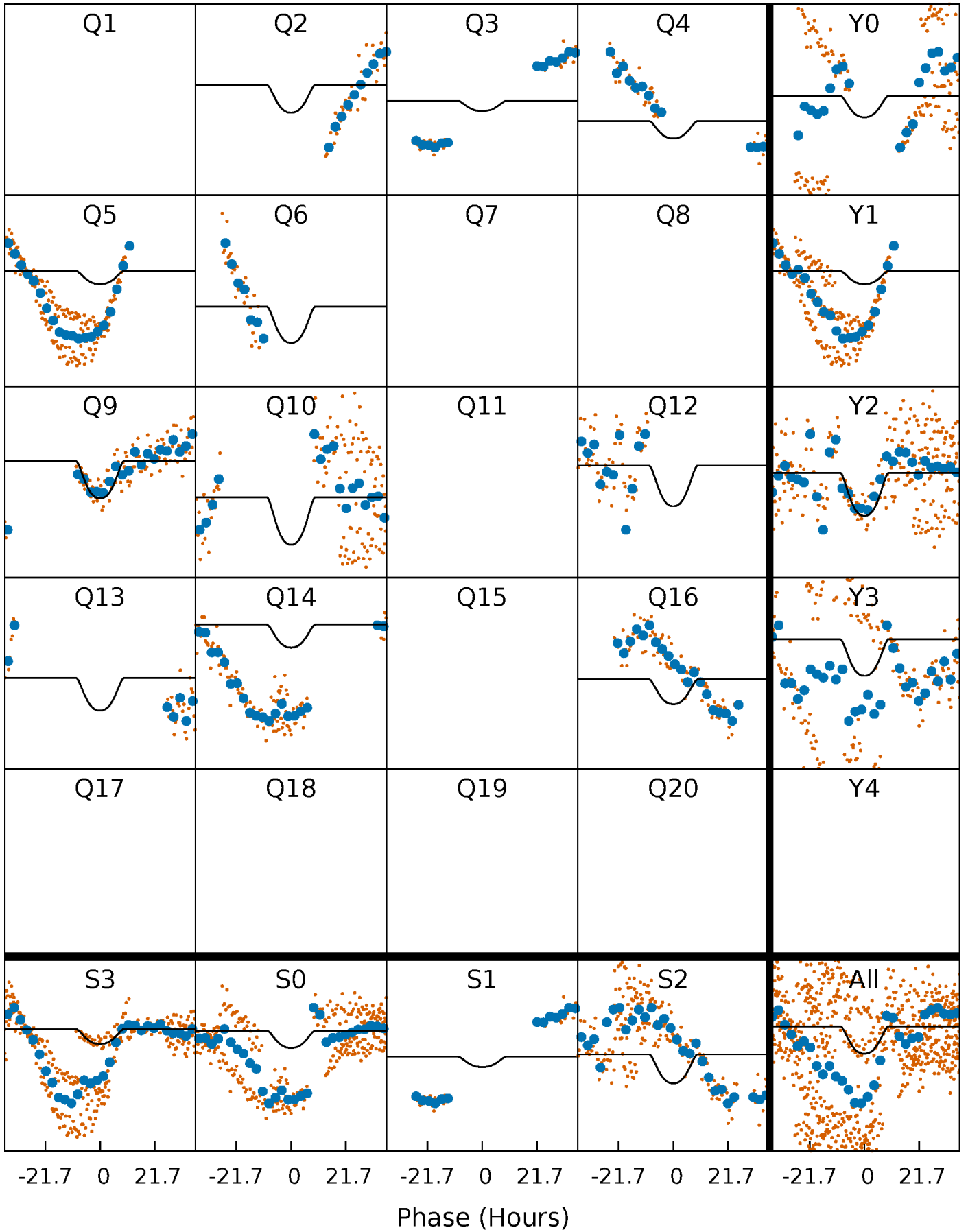
TCE 009602562-02 P= 92.097653 Days  $T_0=169.294628$  (BKJD)





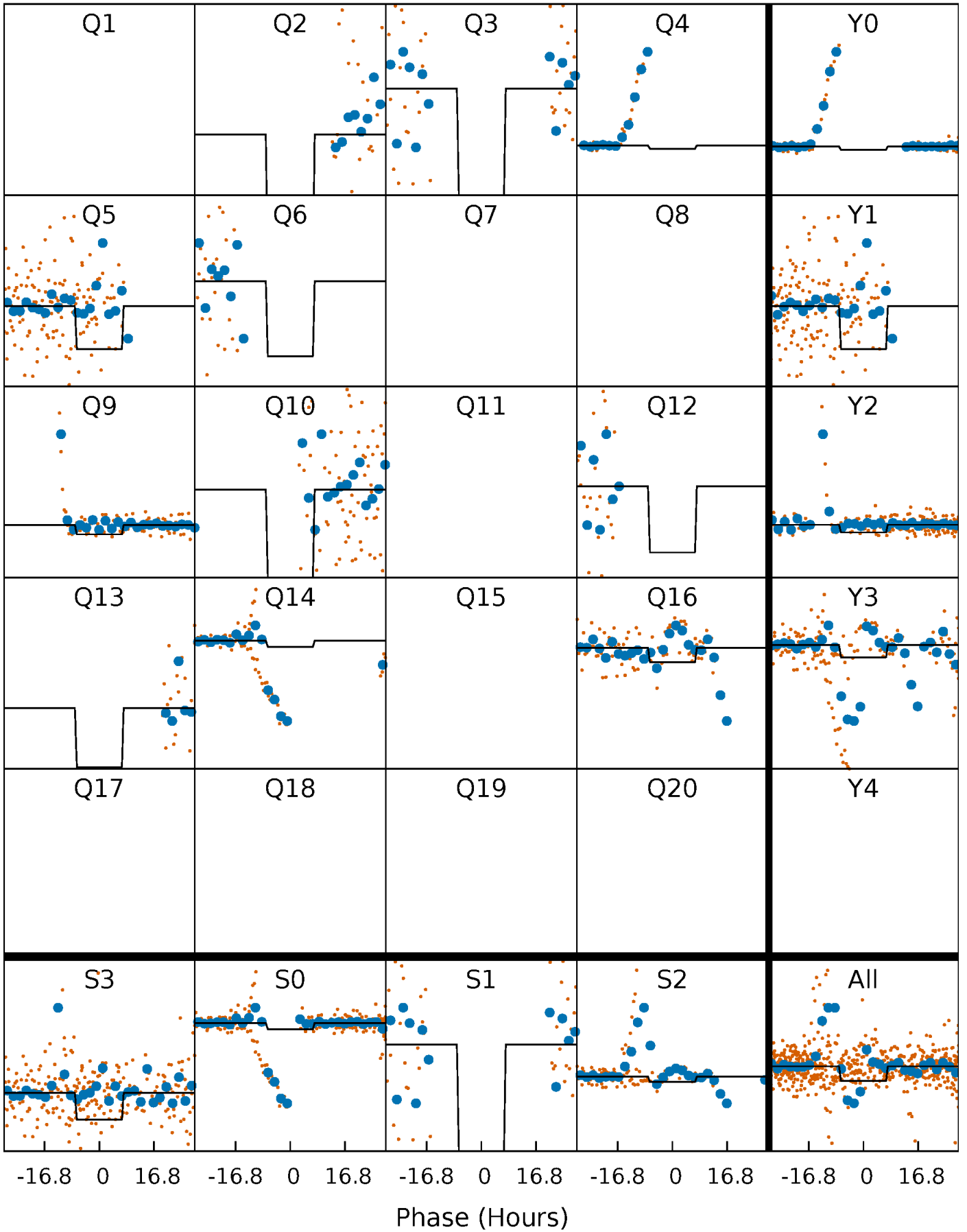
# DV Quarter-Phased Transit Curves

TCE 009602562-02     $P = 92.097653$  Days     $T_0 = 169.294628$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

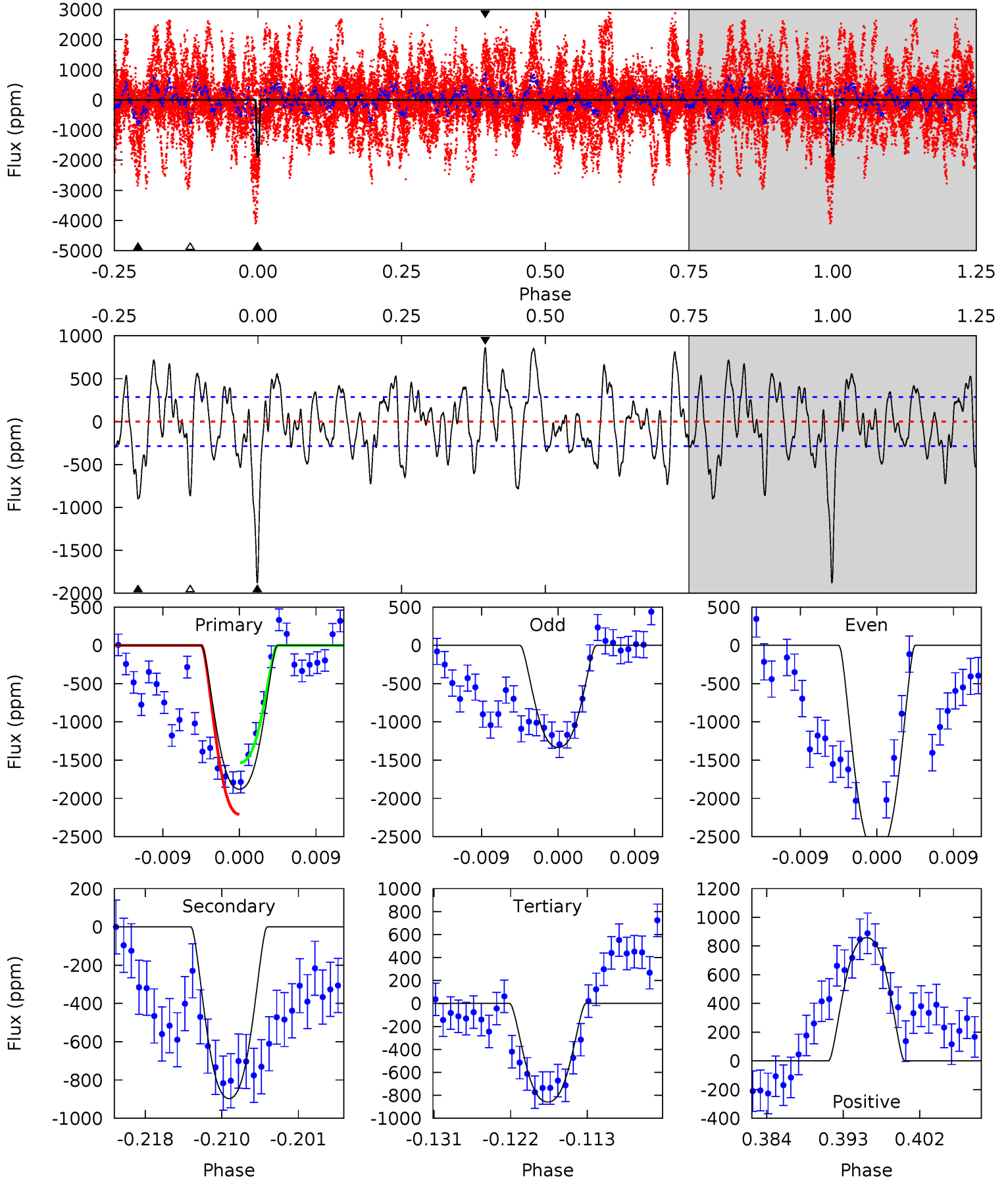
TCE 009602562-02     $P = 92.121300$  Days     $T_0 = 169.326779$  (BKJD)



# DV Model-Shift Uniqueness Test

009602562-02, P = 92.097653 Days, E = 77.196975 Days

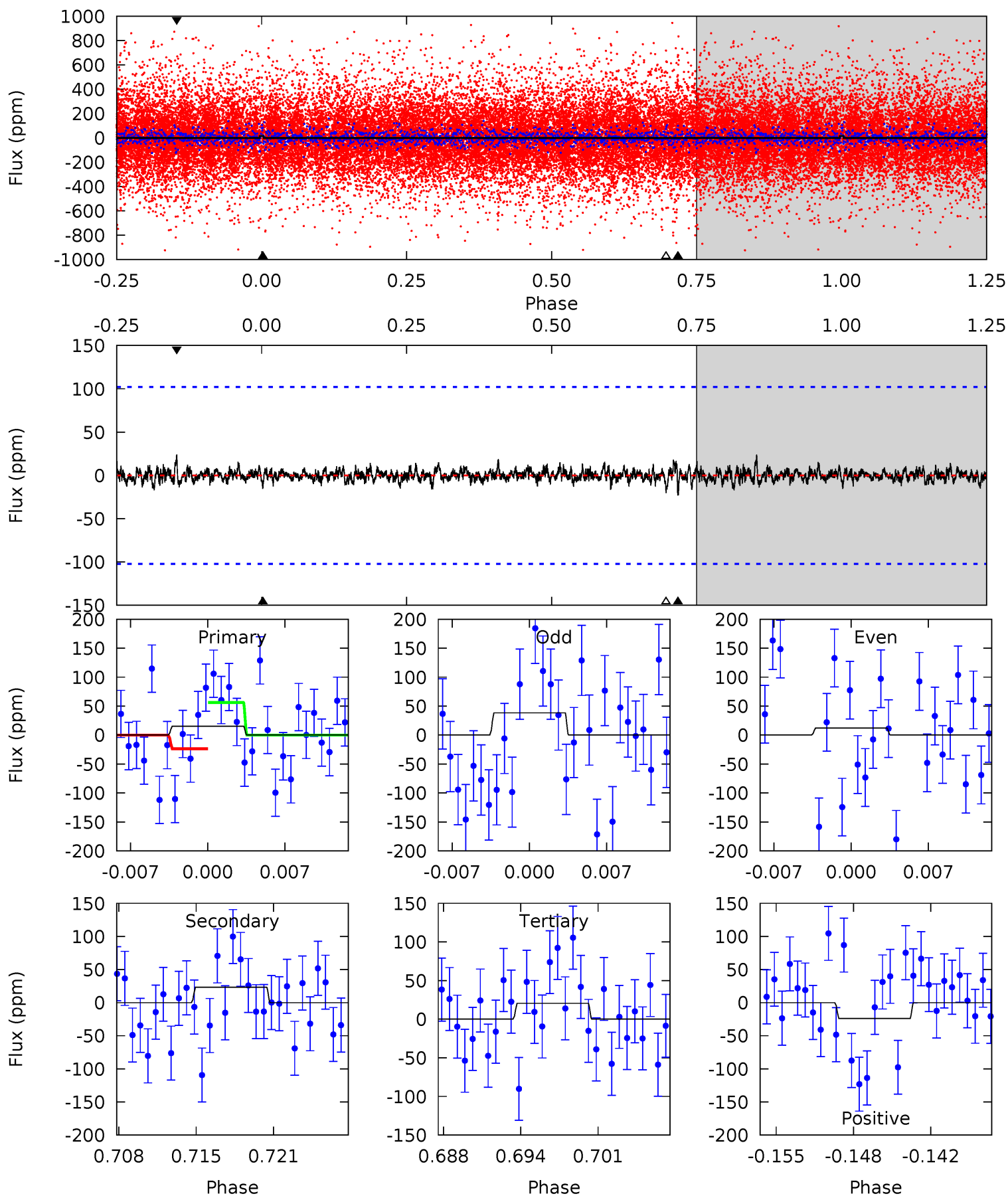
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.2	15.9	15.2	15.2	5.05	2.62	5.94	18.1	18.1	0.69	0.69	11.4	-0.02	0.31	5.93



# Alt Model-Shift Uniqueness Test

009602562-02, P = 92.121300 Days, E = 77.205479 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.77	1.16	1.02	1.20	5.10	2.71	0.25	-0.26	-0.43	0.13	-0.04	0.55	-20.0	0.51	0.82



### Stellar Parameters For KIC 009602562

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5950^{+166}_{-208}$	$4.395^{+0.087}_{-0.203}$	$0.240^{+0.150}_{-0.300}$	$1.114^{+0.353}_{-0.141}$	$1.126^{+0.136}_{-0.149}$	$1.148^{+0.419}_{-0.594}$
	+3%/-3%	+2%/-5%	+62%/-125%	+32%/-13%	+12%/-13%	+37%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 009602562-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-897 \pm 57$	$3.74^{+0.79}_{-0.82}$	$608^{+42}_{-34}$	$5964^{+688}_{-498}$	$6061^{+3841}_{-1913}$
Alt.	$-23 \pm 20$	$1.94^{+0.75}_{-0.69}$	$606^{+49}_{-33}$	$3639^{+815}_{-867}$	$506^{+1124}_{-426}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

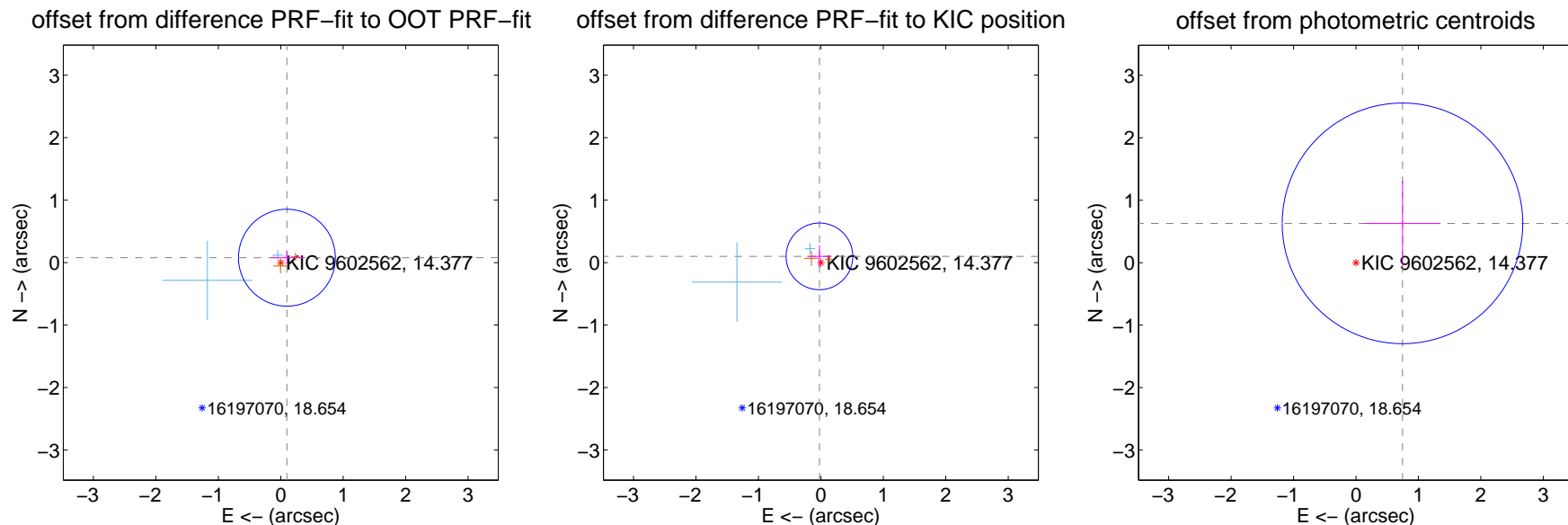
## DV Centroid Data

Supplemental centroid analysis for 009602562-02. Kepler magnitude: 14.38. Transit SNR 7.05

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.126 \pm 0.258$	0.49	$-0.099 \pm 0.263$	$0.078 \pm 0.110$
PRF-fit source offset from KIC position	$0.102 \pm 0.178$	0.57	$0.023 \pm 0.196$	$0.100 \pm 0.177$
photometric centroid source offset	$0.98 \pm 0.64$	1.52	$-0.75 \pm 0.61$	$0.63 \pm 0.68$



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

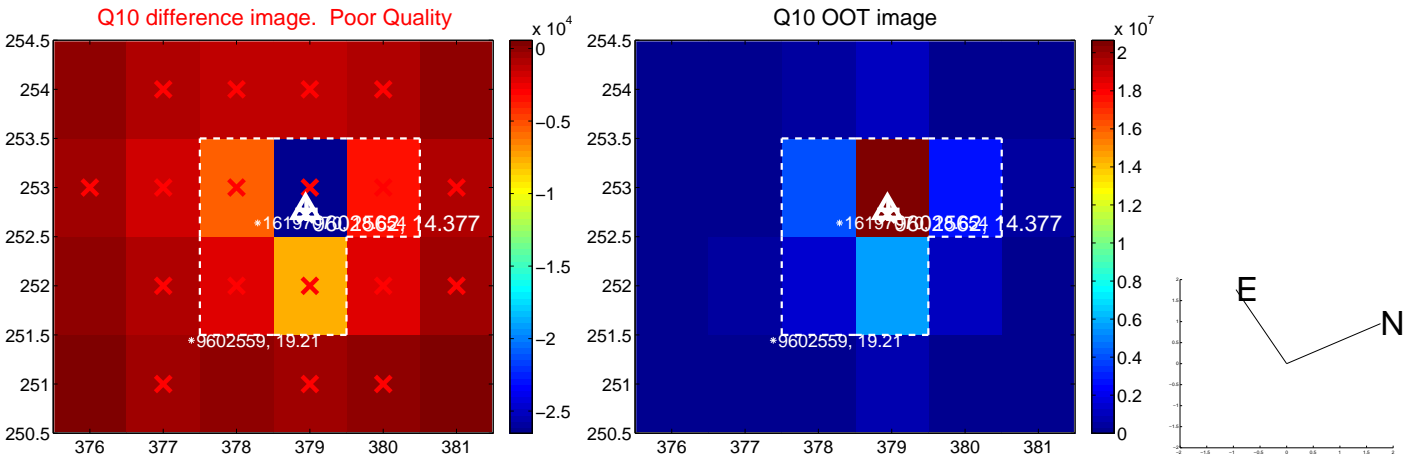
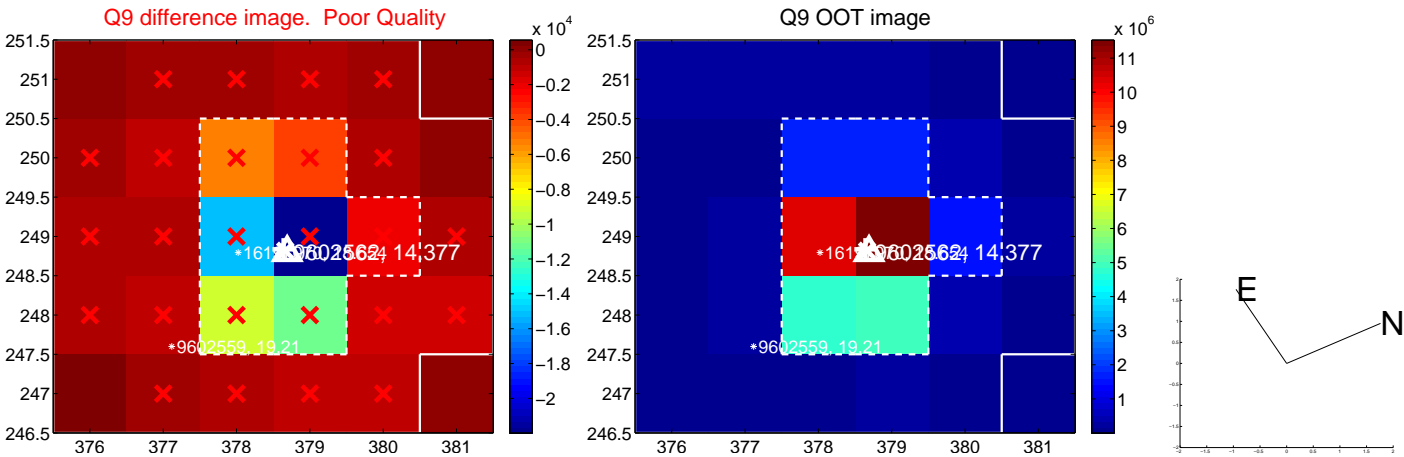




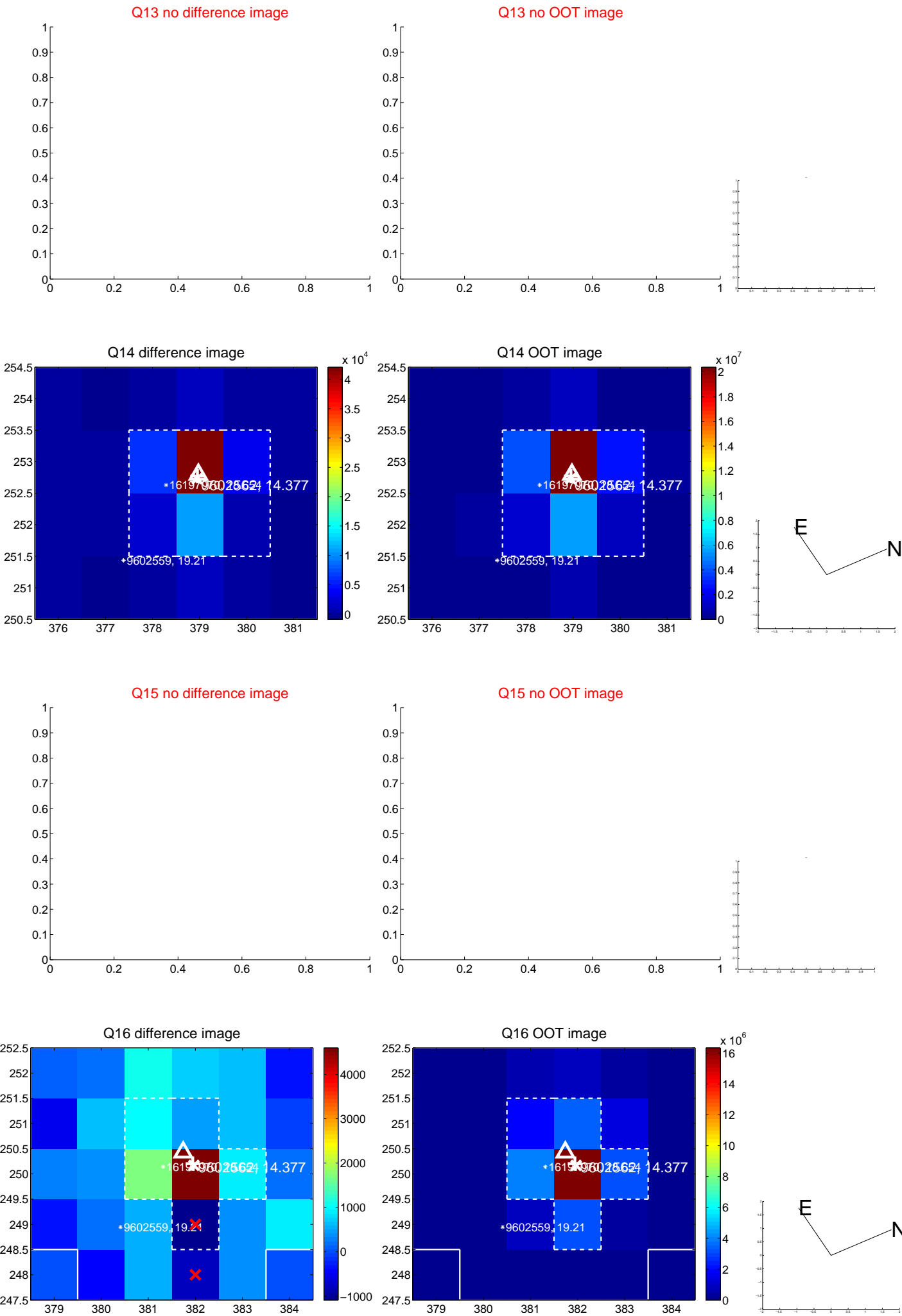
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



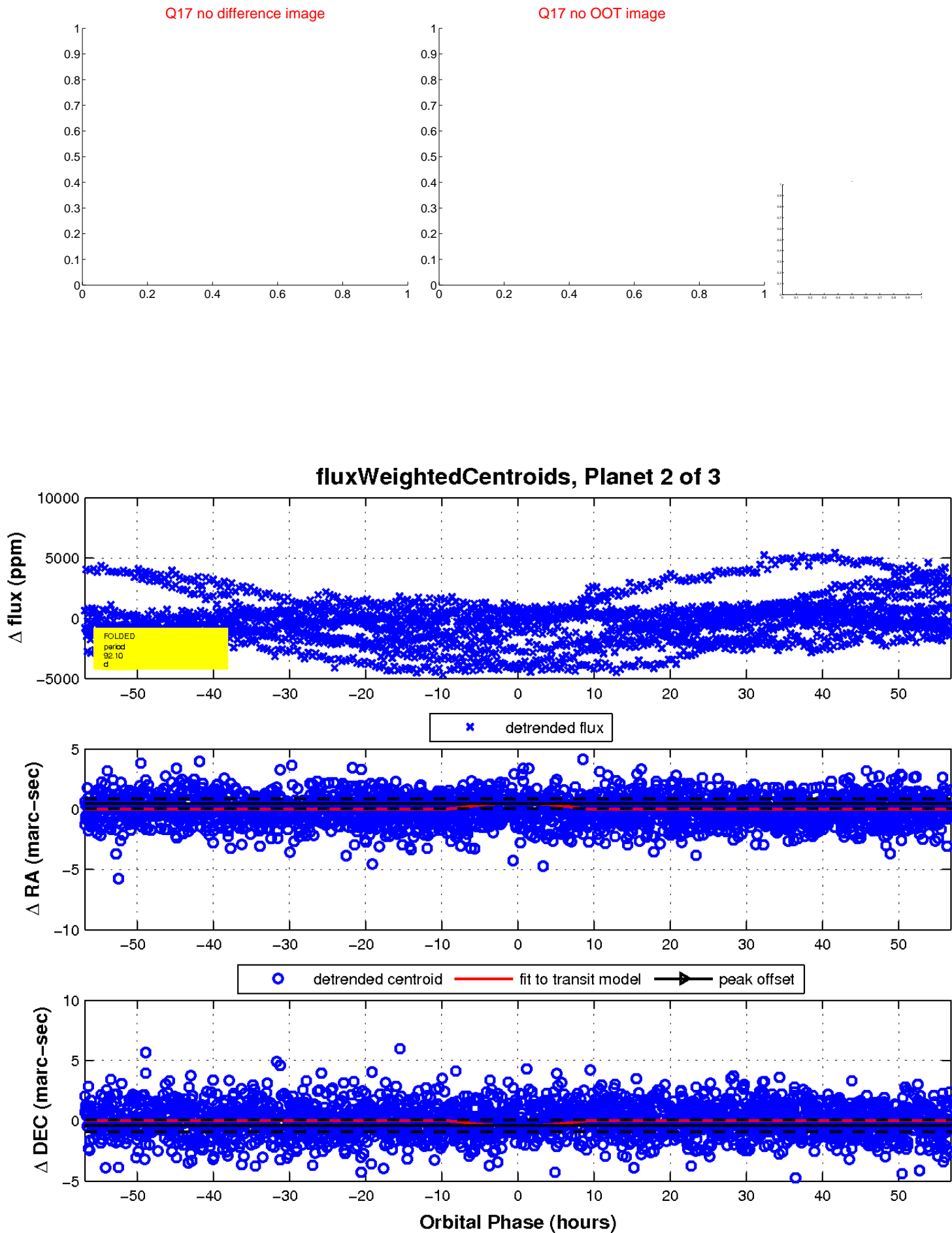
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

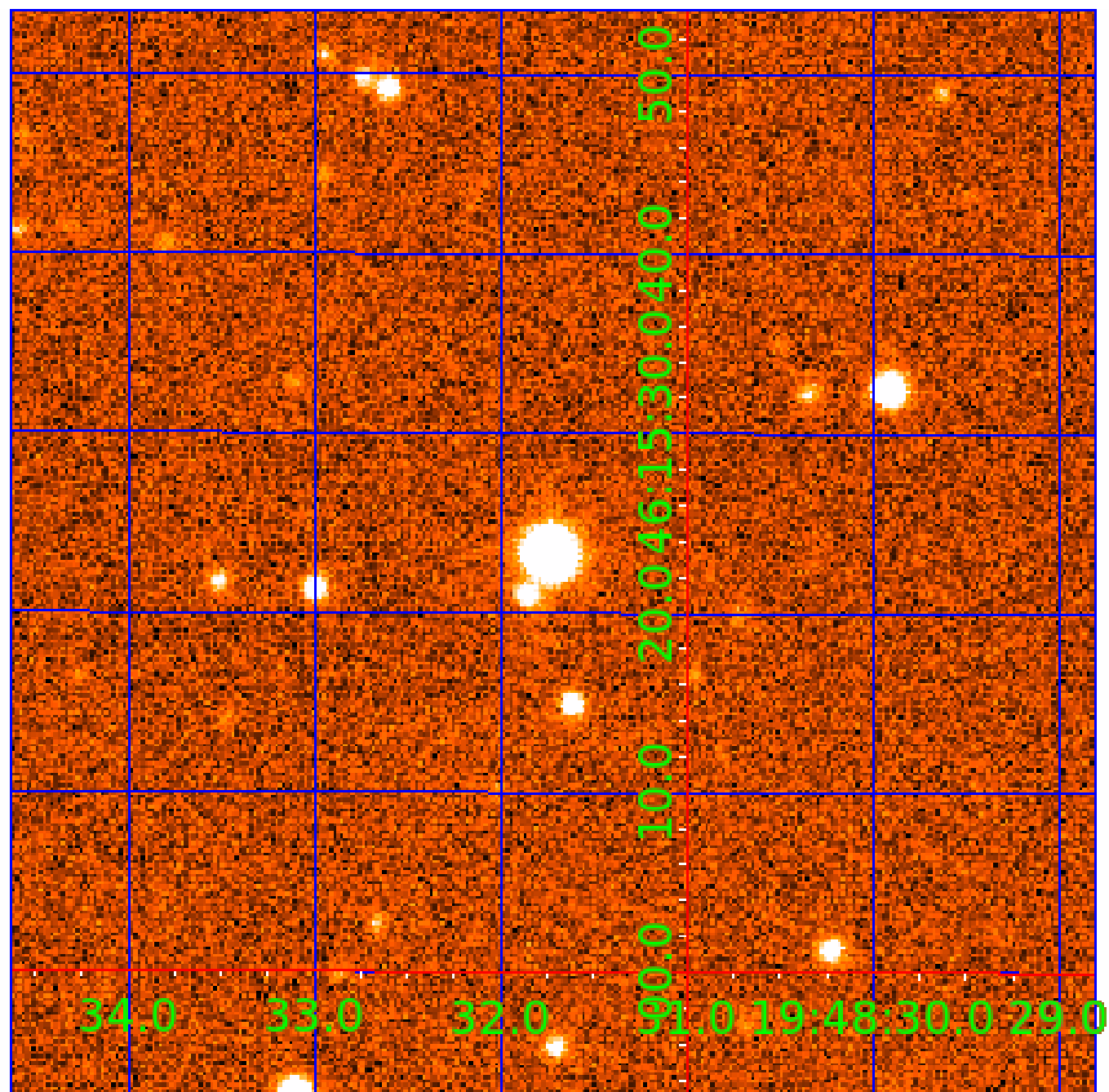


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009602562

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009602562-01	OBS	3985.01	3.556540	133.523782	213.3	11.973	20.4	23.3	1.11	5950	3.30	619.70
009602562-02	OBS	No	92.097653	169.294628	566.2	18.964	16.1	7.1	1.11	5950	3.57	8.09
009602562-03	OBS	No	131.537964	197.256527	135.7	73.411	13.5	2.0	1.11	5950	1.31	5.03

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009602562-01	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH
009602562-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009602562-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

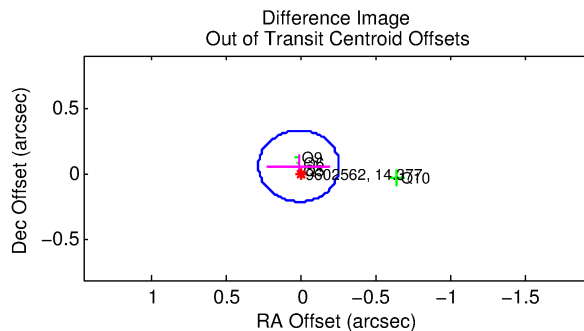
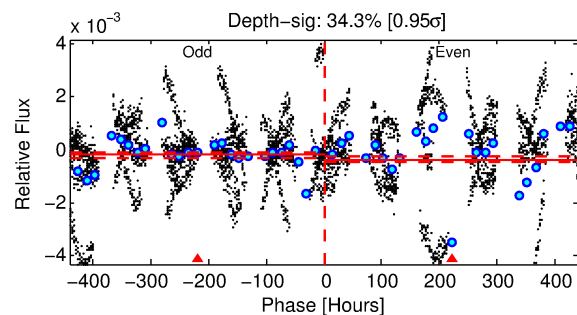
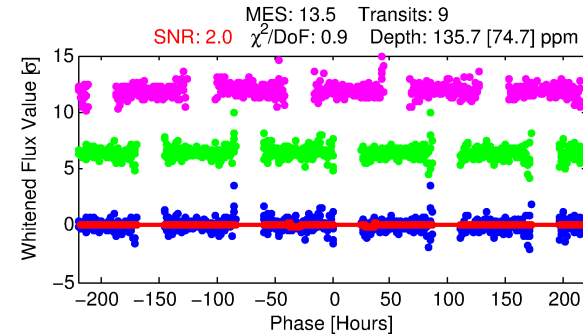
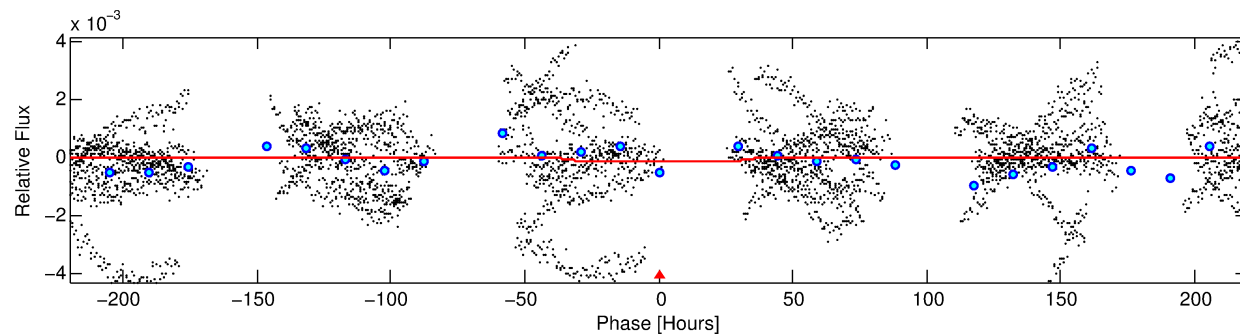
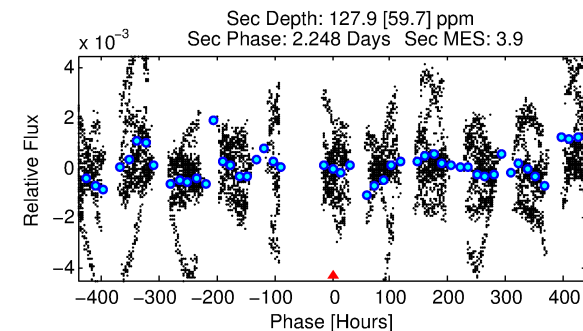
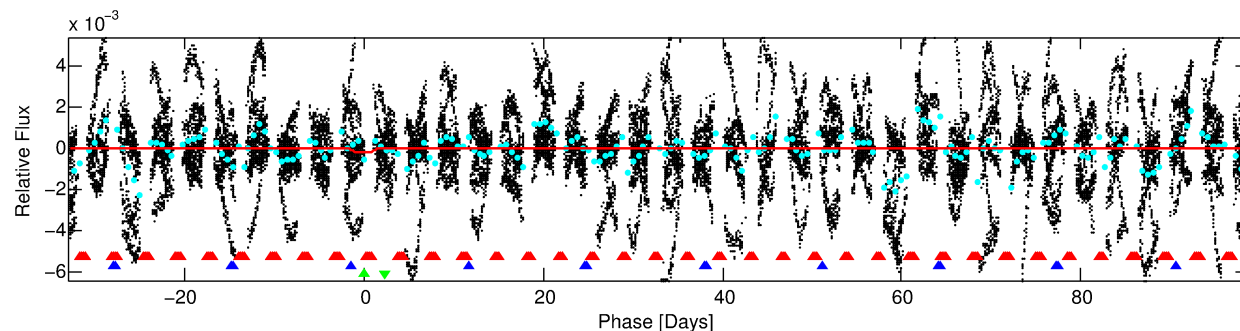
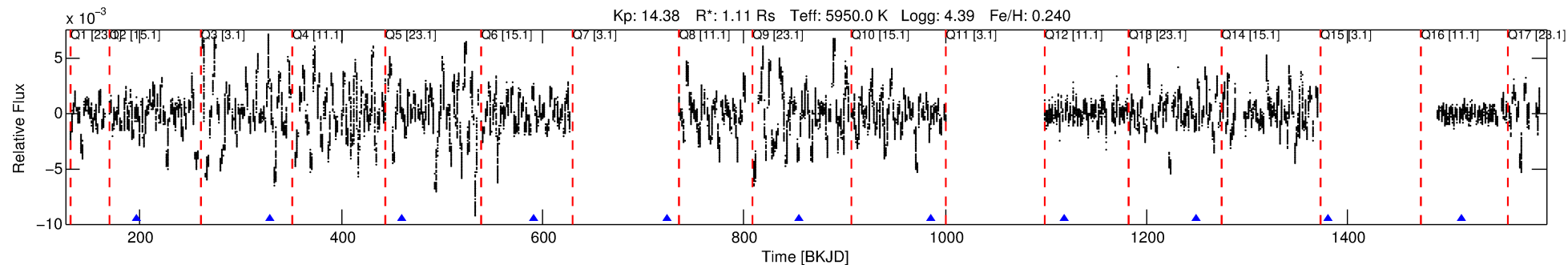
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009602562-03

No Significant Match Found

# DV One-Page Summary

KIC: 9602562 Candidate: 3 of 3 Period: 131.538 d  
KOI: K03985 Corr: No Ephemeris Match



## DV Fit Results:

Period = 131.53796 [0.00939] d  
Epoch = 197.2565 [0.0500] BKJD  
Rp/R\* = 0.0108 [0.0043]  
a/R\* = 12.63 [15.20]  
b = 0.42 [2.41]  
Seff = 5.03 [2.02]  
Teq = 382 [38] K  
Rp = 1.31 [0.67] Re  
a = 0.5264 [0.1382] AU  
Ag = 11321.44 [11368.12] [1.00σ]  
Teffp = 6090 [1433] K [3.98σ]

## DV Diagnostic Results:

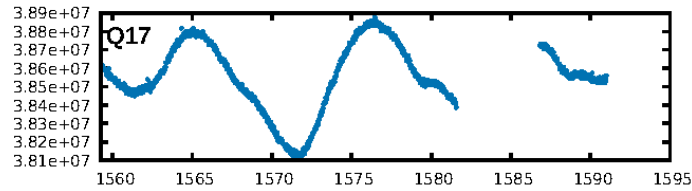
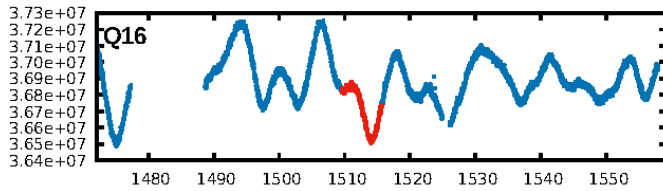
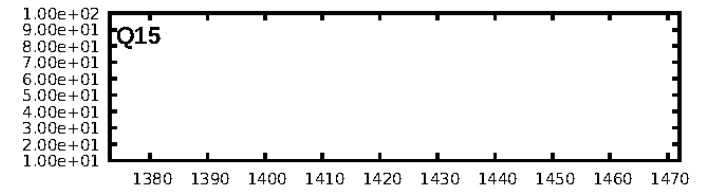
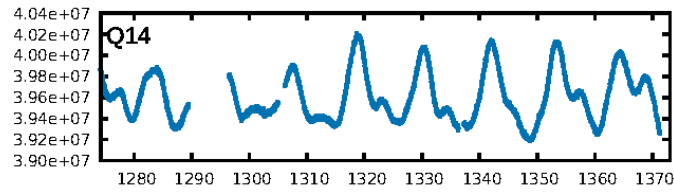
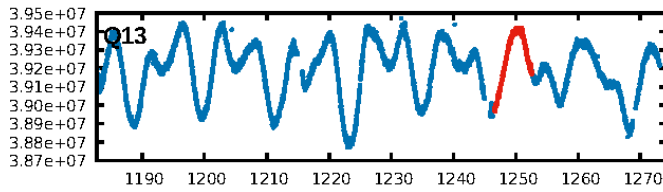
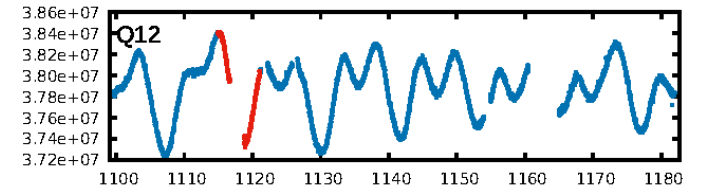
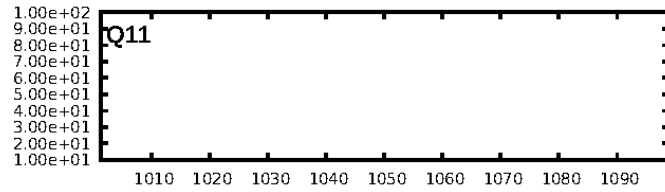
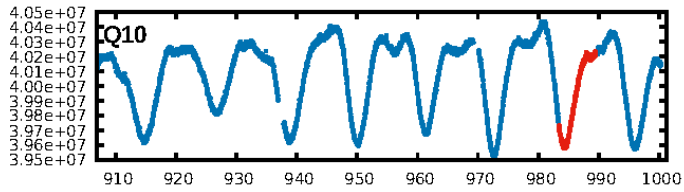
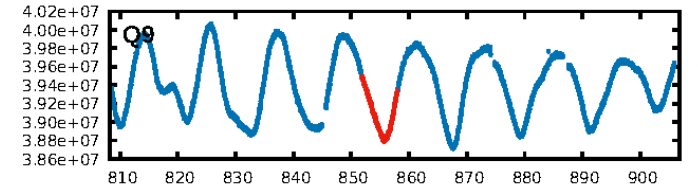
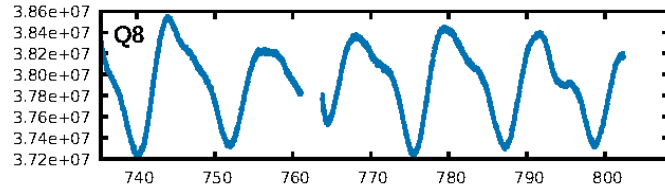
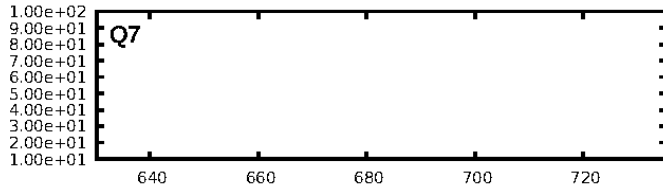
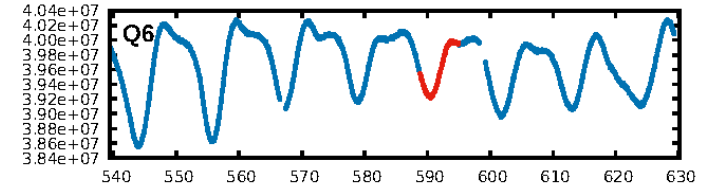
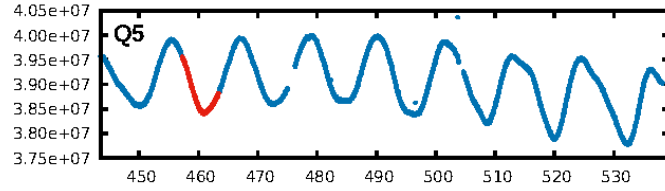
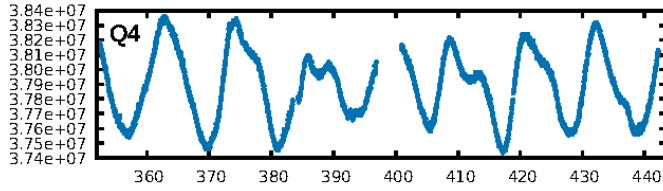
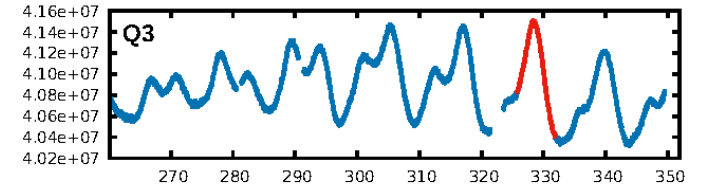
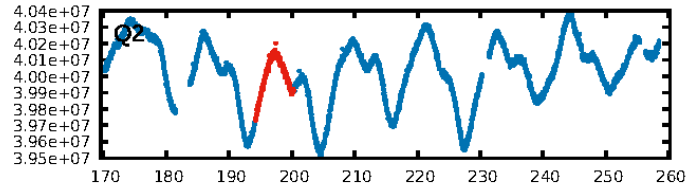
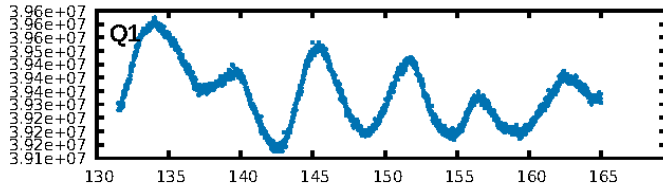
ShortPeriod-sig: 100.0% [12.48σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 60.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.65e-17  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -0.865  
Centroid-sig: 18.9%  
Centroid-so: 1.680 arcsec [1.08σ]  
OotOffset-rm: 0.063 arcsec [0.70σ]  
OotOffset-st: 2/0/0/2 [4]  
KicOffset-rm: 0.093 arcsec [0.65σ]  
KicOffset-st: 2/0/0/2 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 0.00 [0/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:34:45 Z

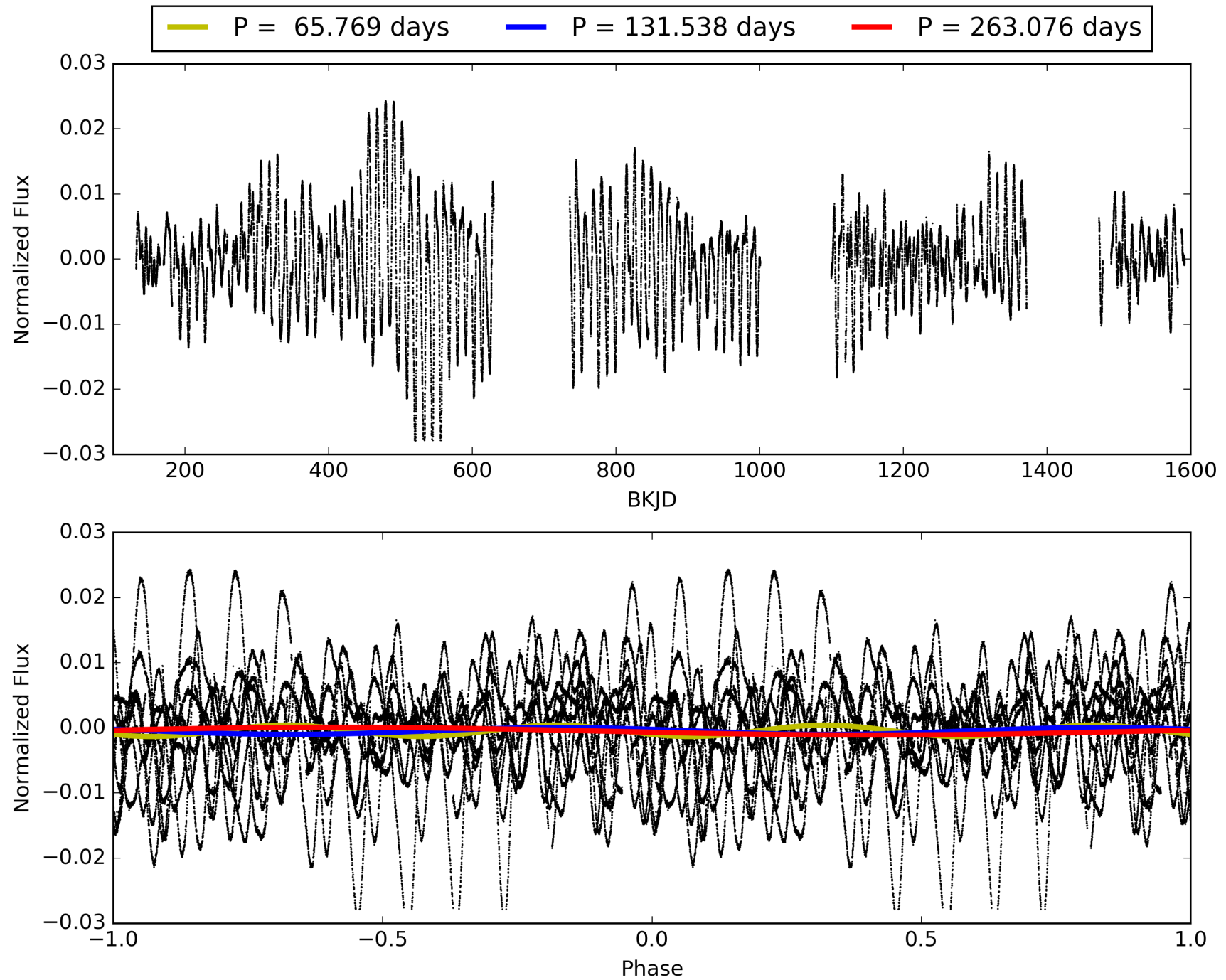
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 009602562-03, PDC Light Curves

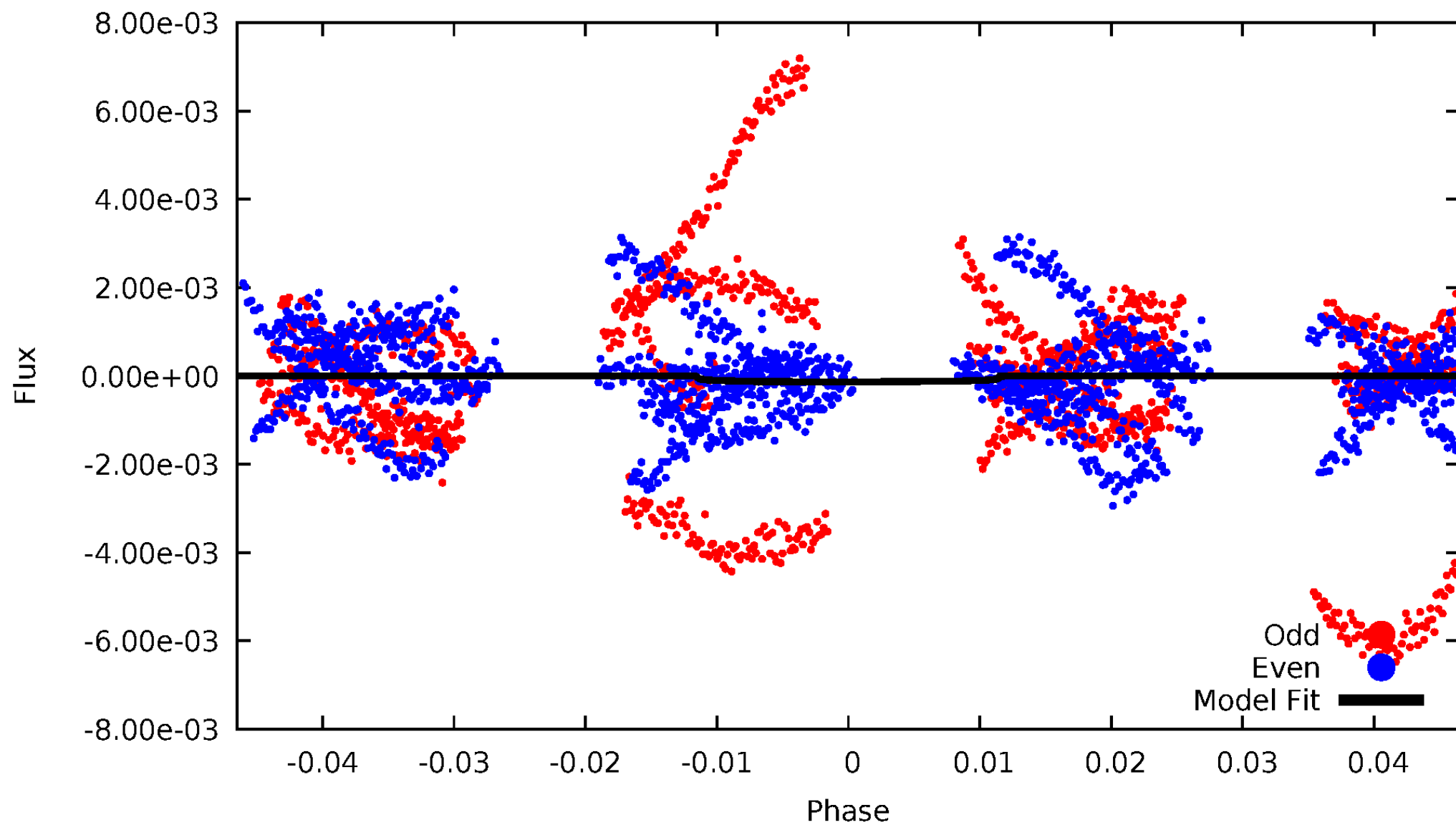


TCE 009602562-03



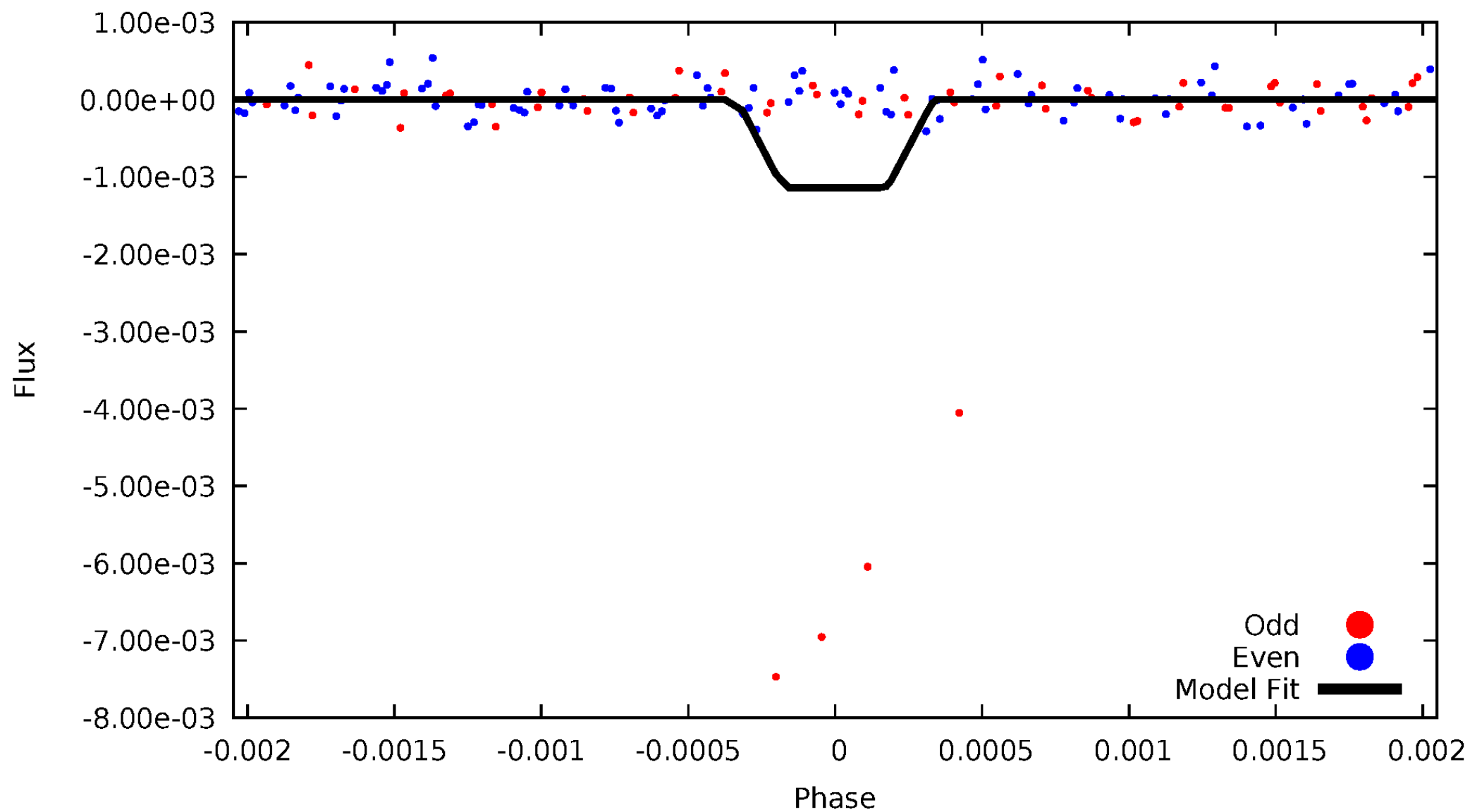
# DV Odd/Even

TCE 009602562-03



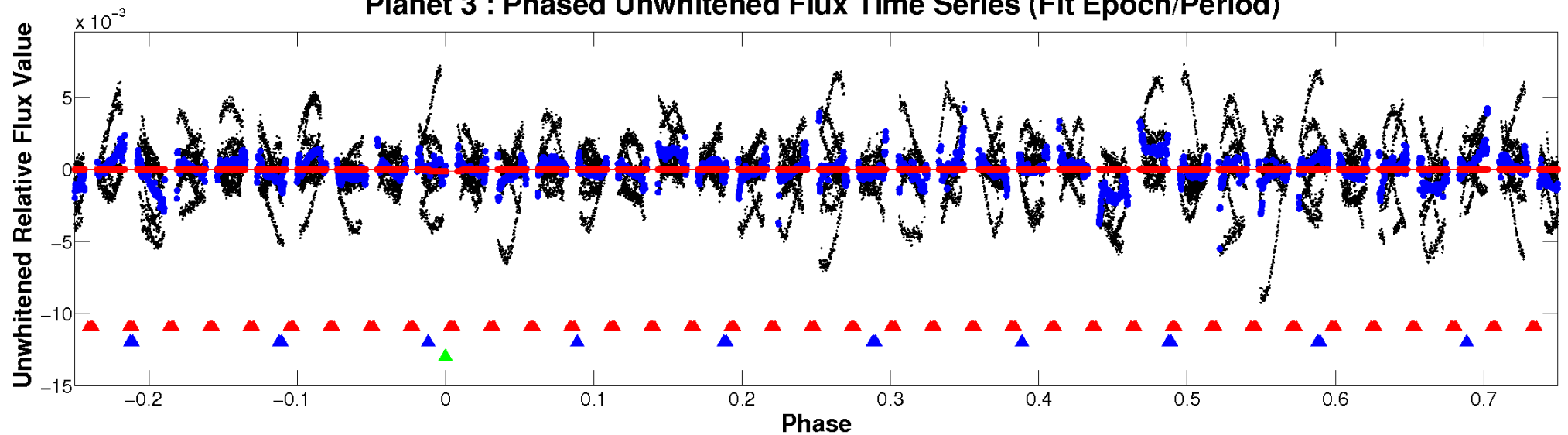
# ALT Odd/Even

TCE 009602562-03

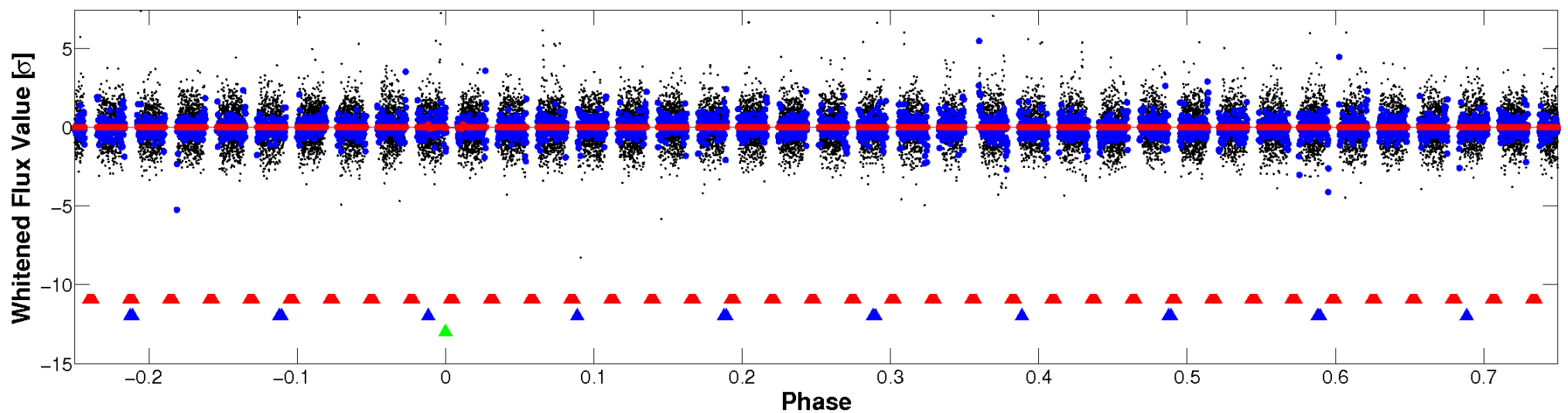


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

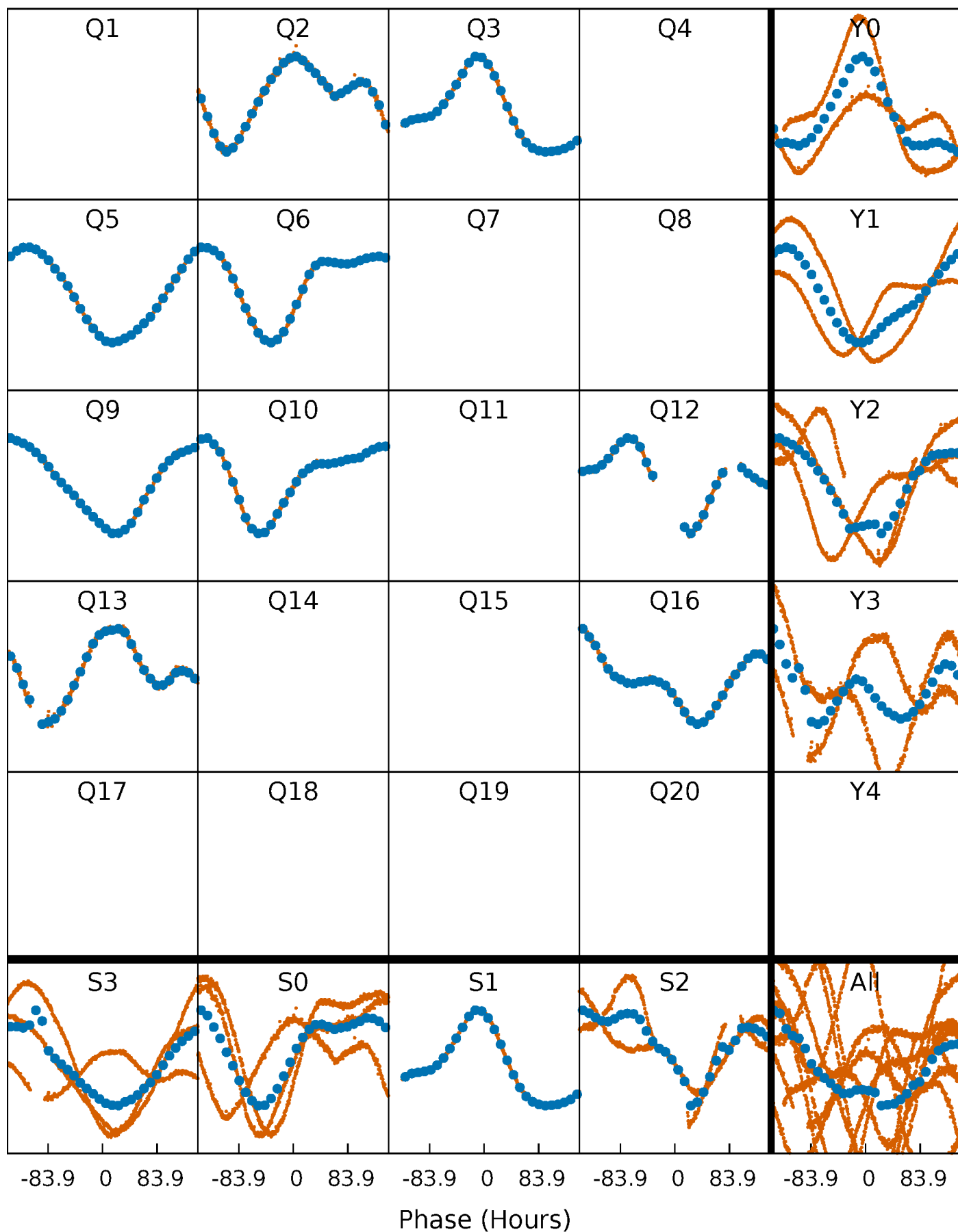


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

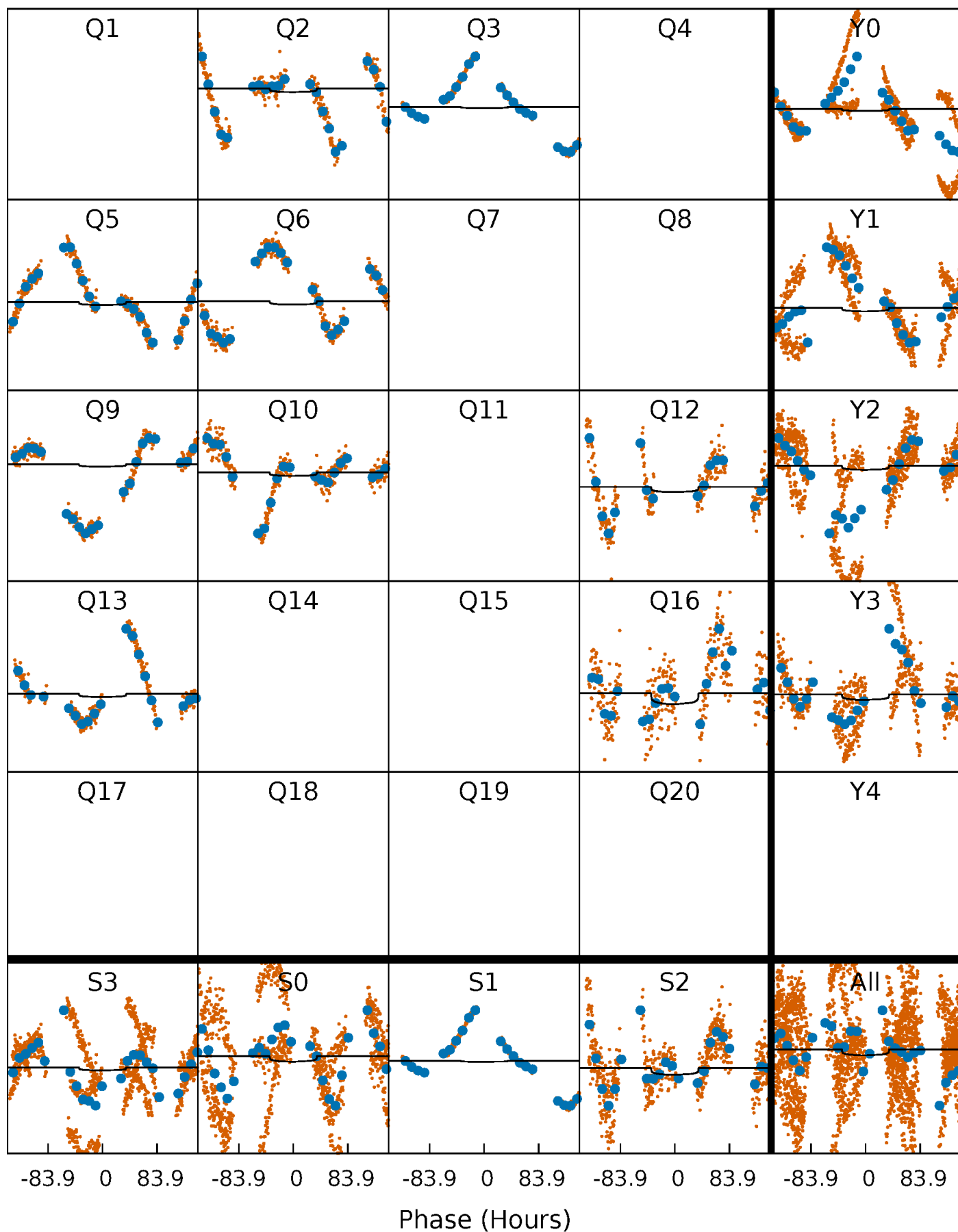
TCE 009602562-03 P=131.537964 Days  $T_0=197.256527$  (BKJD)





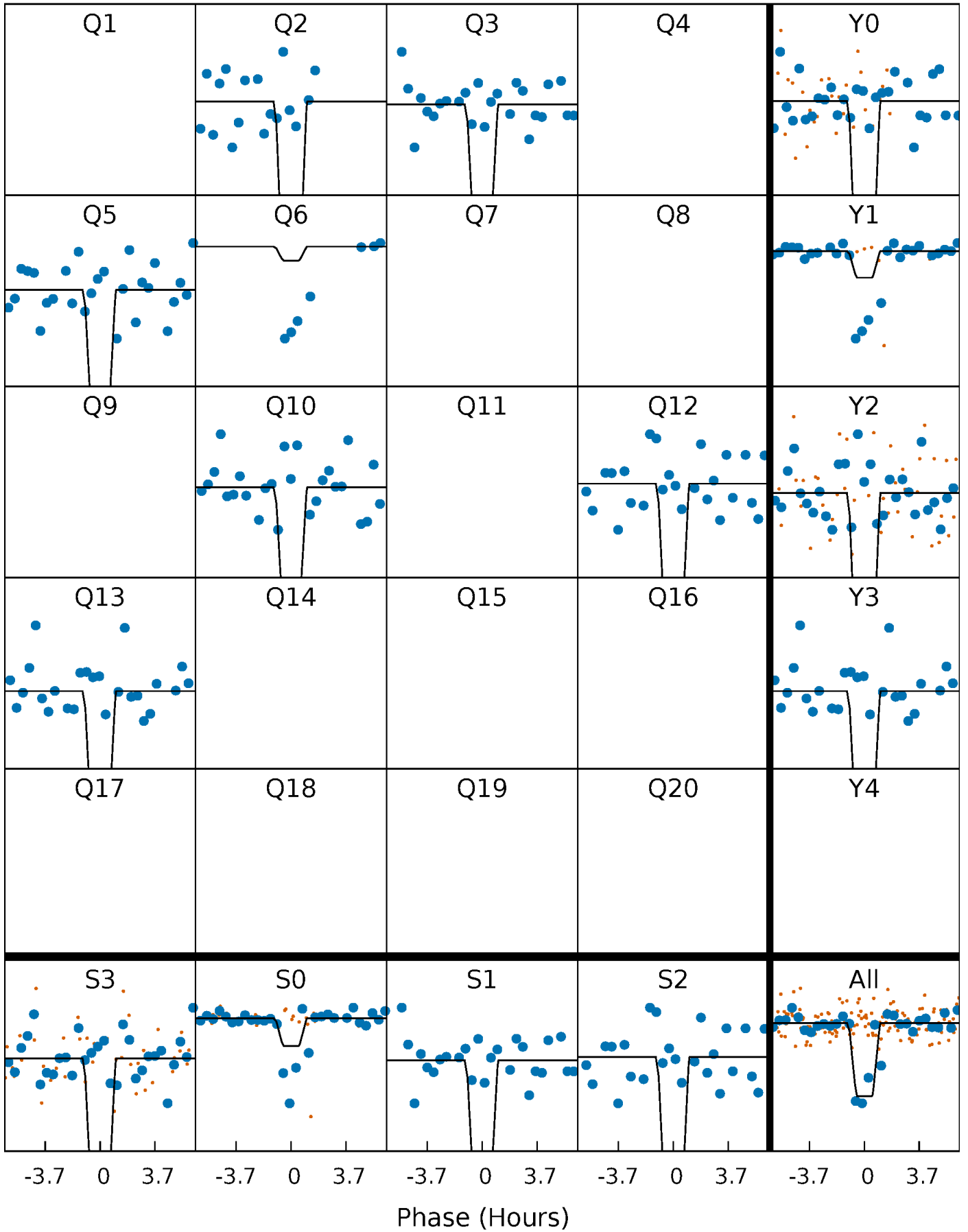
# DV Quarter-Phased Transit Curves

TCE 009602562-03     $P=131.537964$  Days     $T_0=197.256527$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

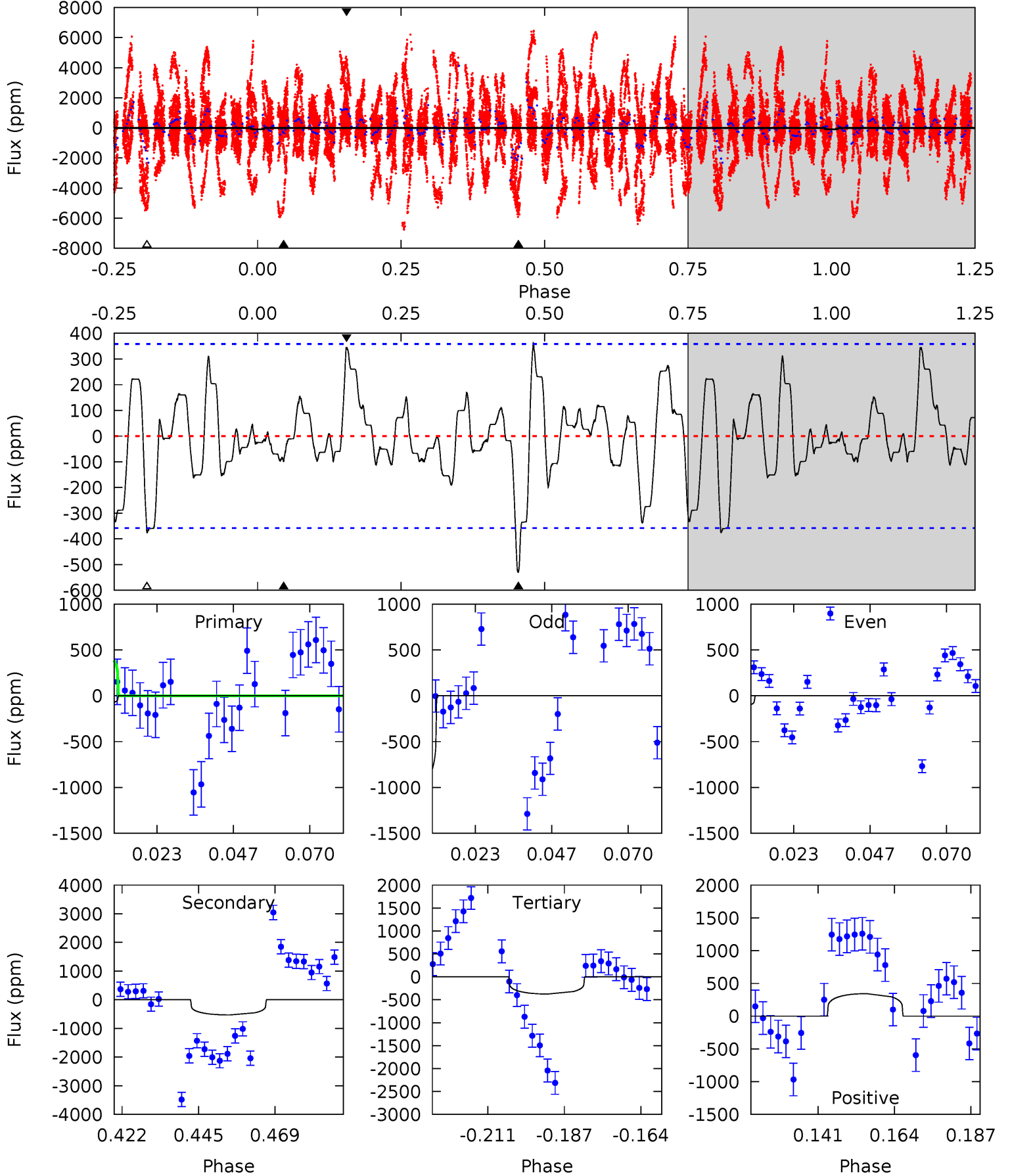
TCE 009602562-03     $P=130.968619$  Days     $T_0=196.715184$  (BKJD)



# DV Model-Shift Uniqueness Test

009602562-03, P = 131.537964 Days, E = 65.718563 Days

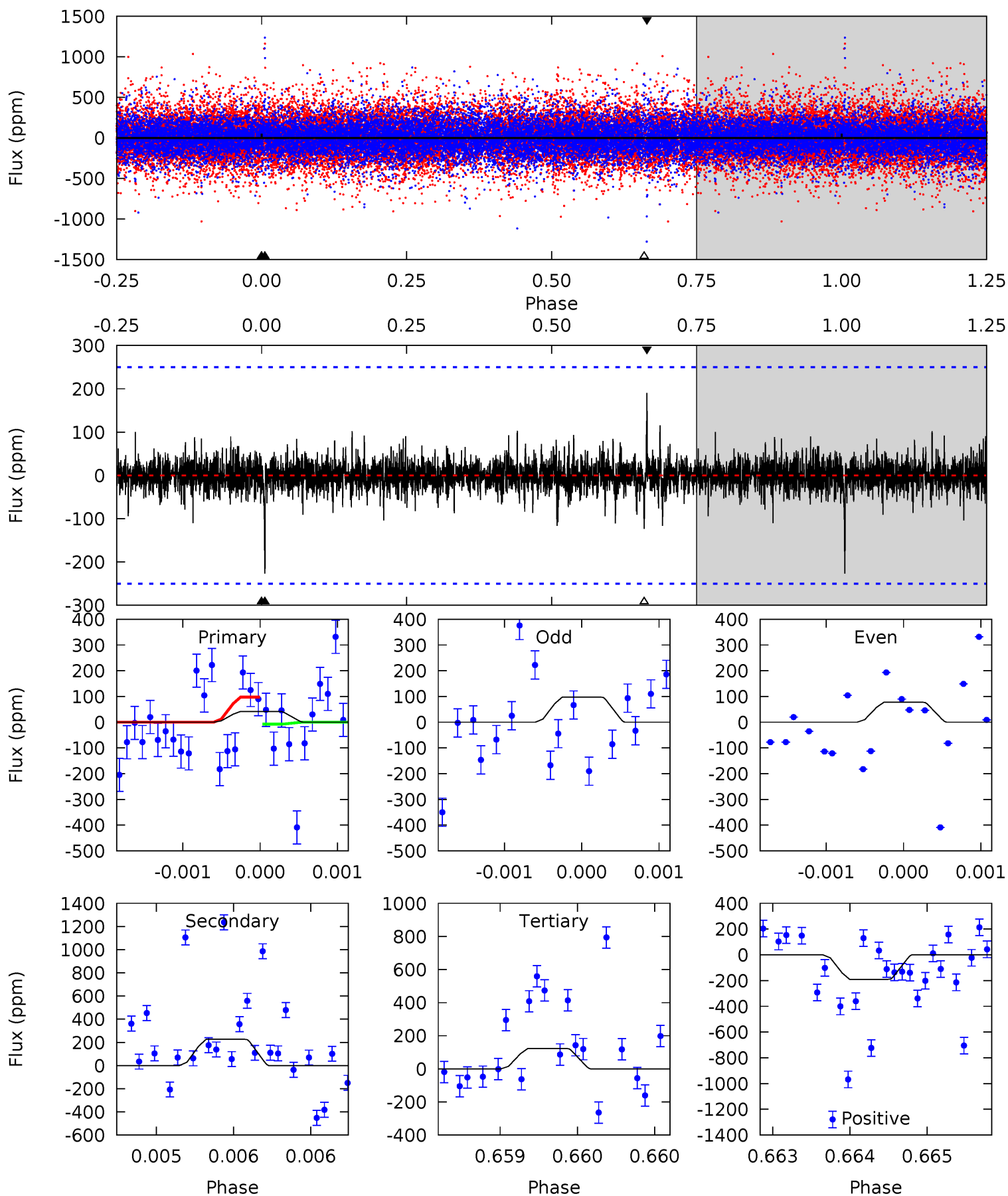
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.36	7.18	5.08	4.66	4.86	2.27	1.82	-3.72	-3.30	2.10	2.52	6.29	-16.7	0.41	2.41



# Alt Model-Shift Uniqueness Test

009602562-03, P = 130.968619 Days, E = 65.746565 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.93	5.02	2.73	4.21	5.53	3.42	0.59	-1.80	-3.28	2.29	0.80	0.18	-38.5	0.46	1.00



### Stellar Parameters For KIC 009602562

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5950^{+166}_{-208}$	$4.395^{+0.087}_{-0.203}$	$0.240^{+0.150}_{-0.300}$	$1.114^{+0.353}_{-0.141}$	$1.126^{+0.136}_{-0.149}$	$1.148^{+0.419}_{-0.594}$
	+3%/-3%	+2%/-5%	+62%/-125%	+32%/-13%	+12%/-13%	+37%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 009602562-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-529 \pm 74$	$1.32^{+0.61}_{-0.51}$	$539^{+39}_{-27}$	$9214^{+4747}_{-1910}$	$44539^{+76851}_{-23339}$
Alt.	$-227 \pm 45$	$4.15^{+0.84}_{-0.65}$	$538^{+44}_{-25}$	$4221^{+285}_{-256}$	$1906^{+876}_{-677}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

## DV Centroid Data

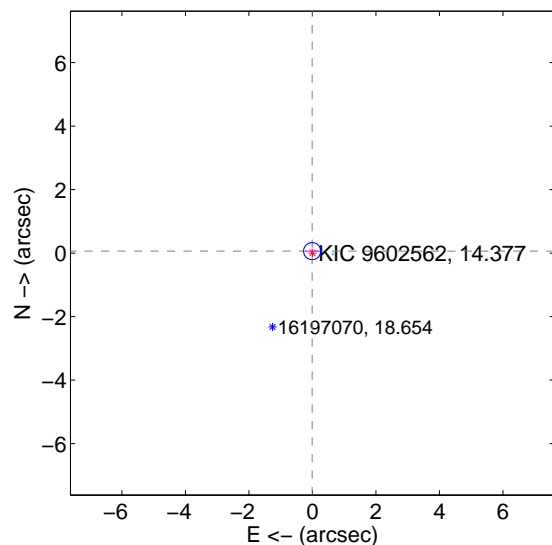
Supplemental centroid analysis for 009602562-03. Kepler magnitude: 14.38. Transit SNR 1.96

There are 4 quarters with good PRF difference image offsets

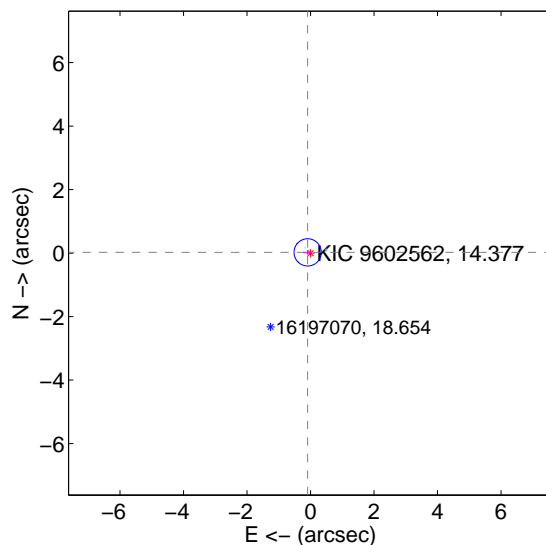
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.063 \pm 0.090$	0.70	$0.009 \pm 0.208$	$0.063 \pm 0.075$
PRF-fit source offset from KIC position	$0.093 \pm 0.143$	0.65	$0.091 \pm 0.144$	$0.023 \pm 0.073$
photometric centroid source offset	$1.68 \pm 1.56$	1.08	$-0.40 \pm 1.29$	$-1.63 \pm 1.57$

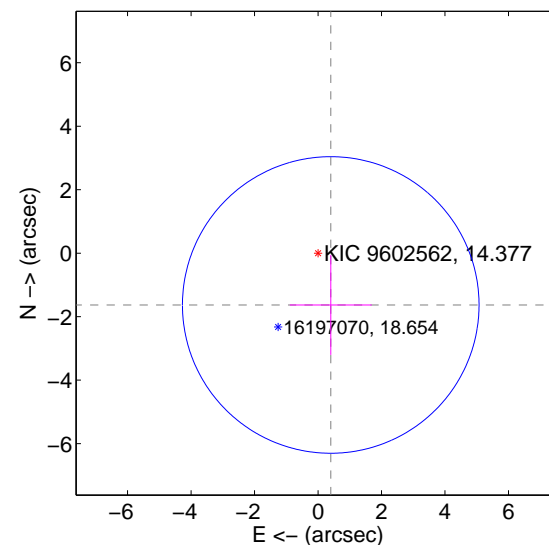
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



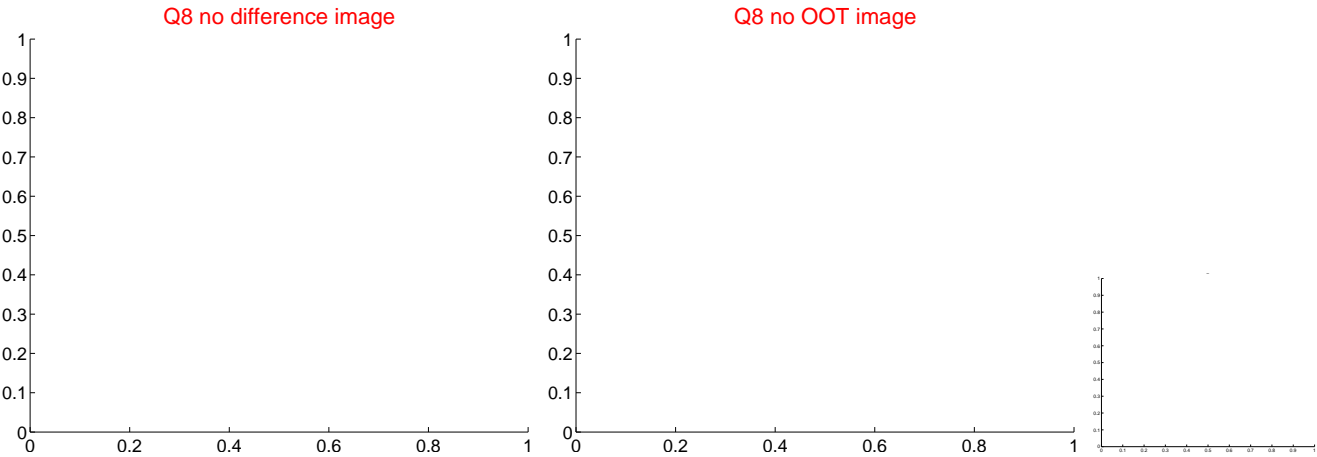
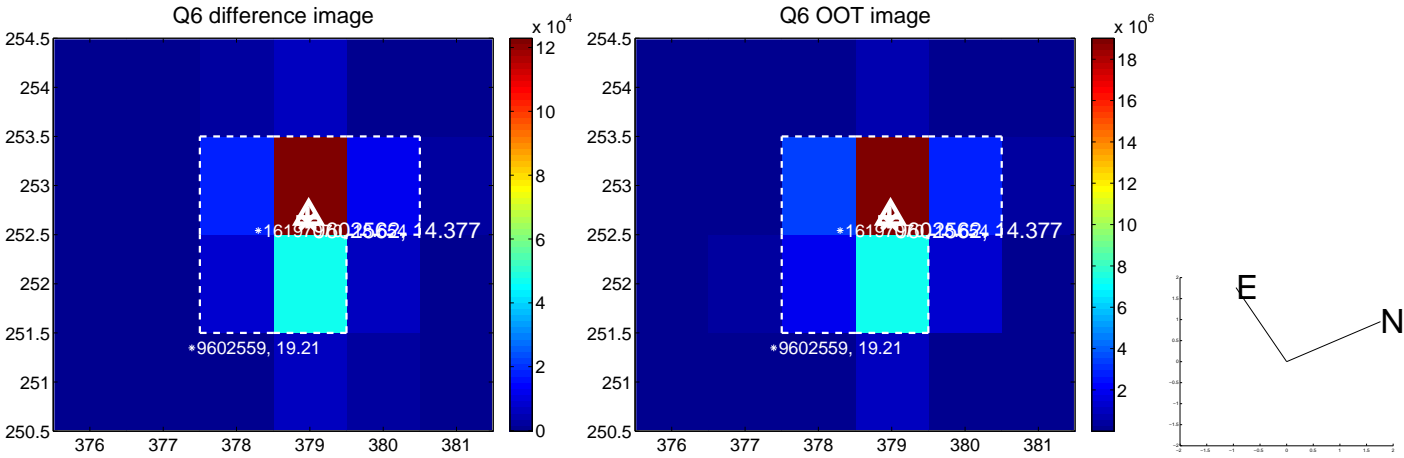
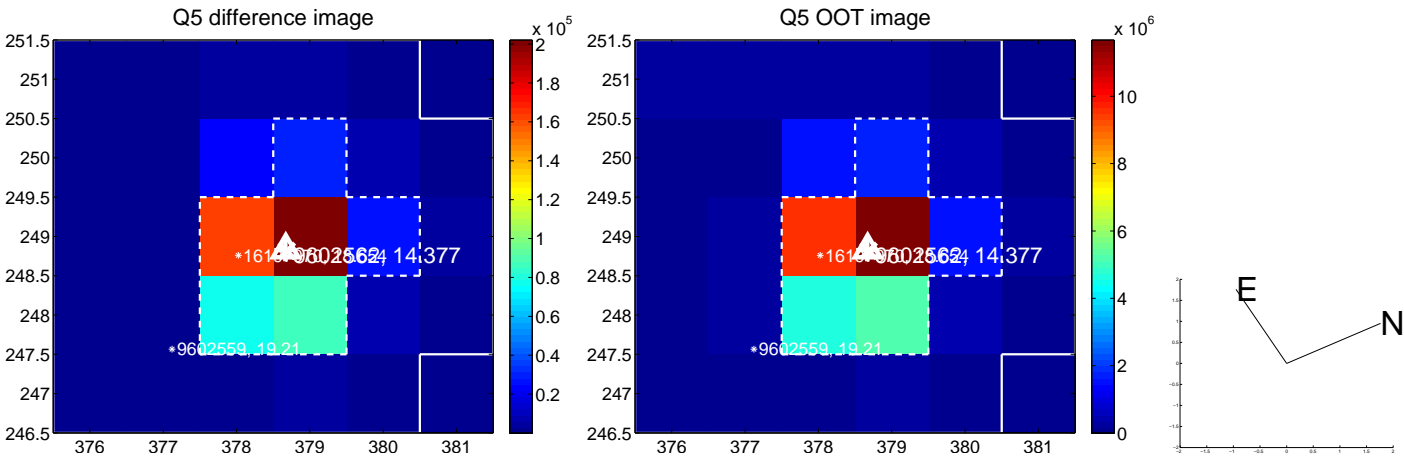
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.



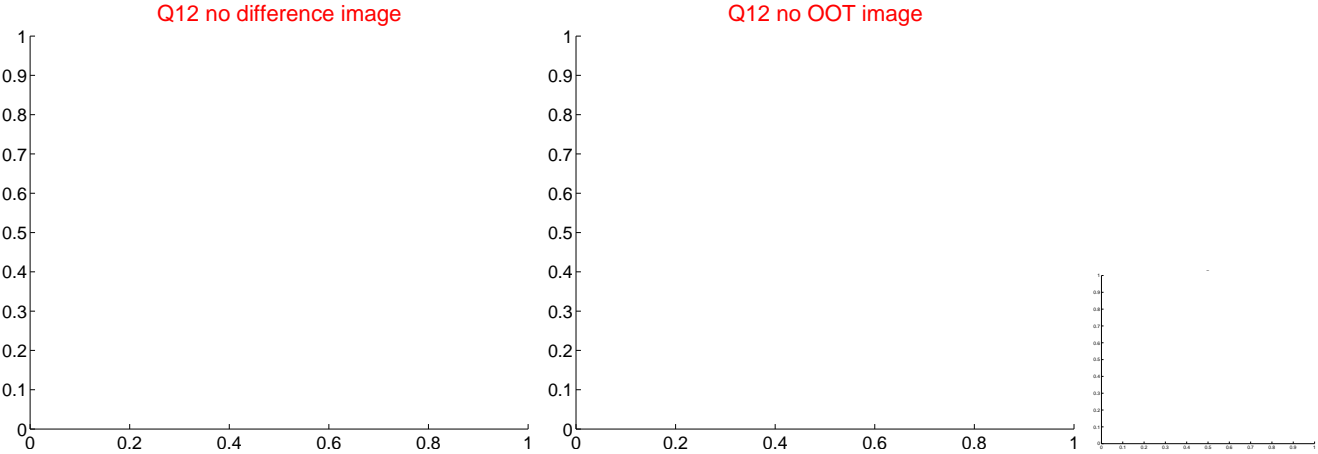
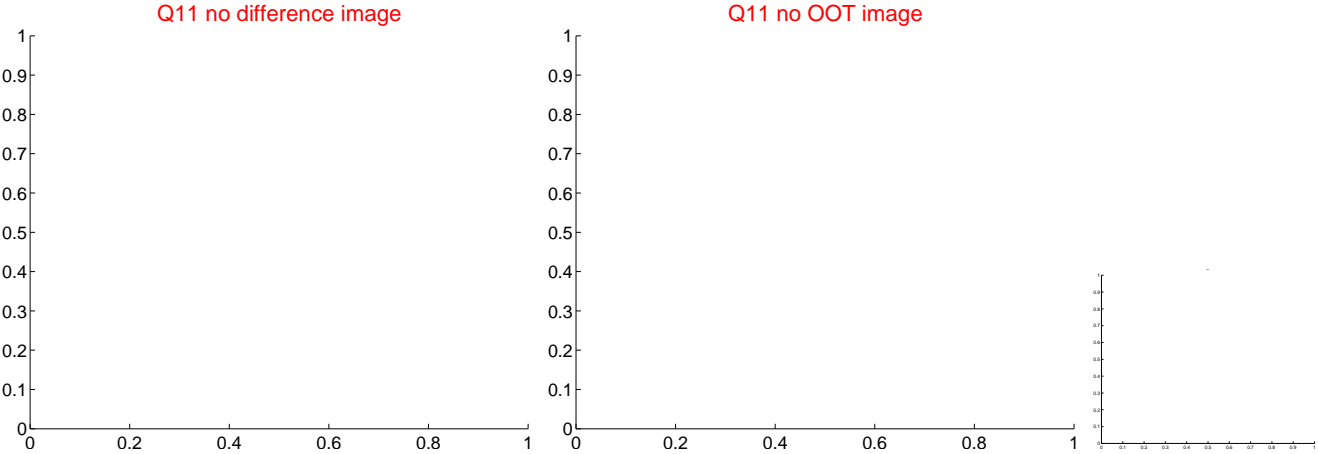
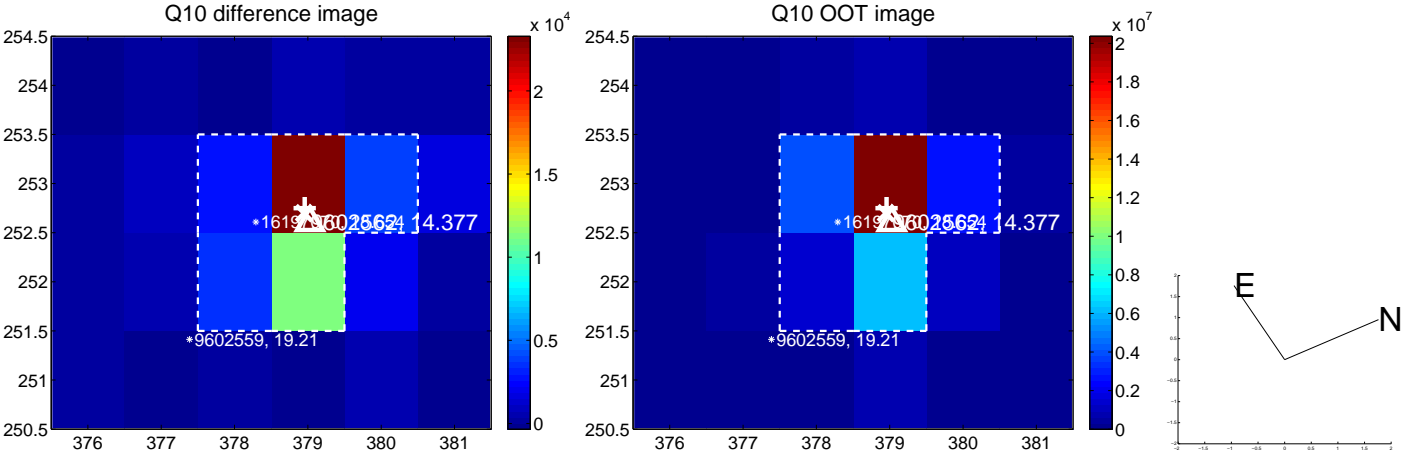
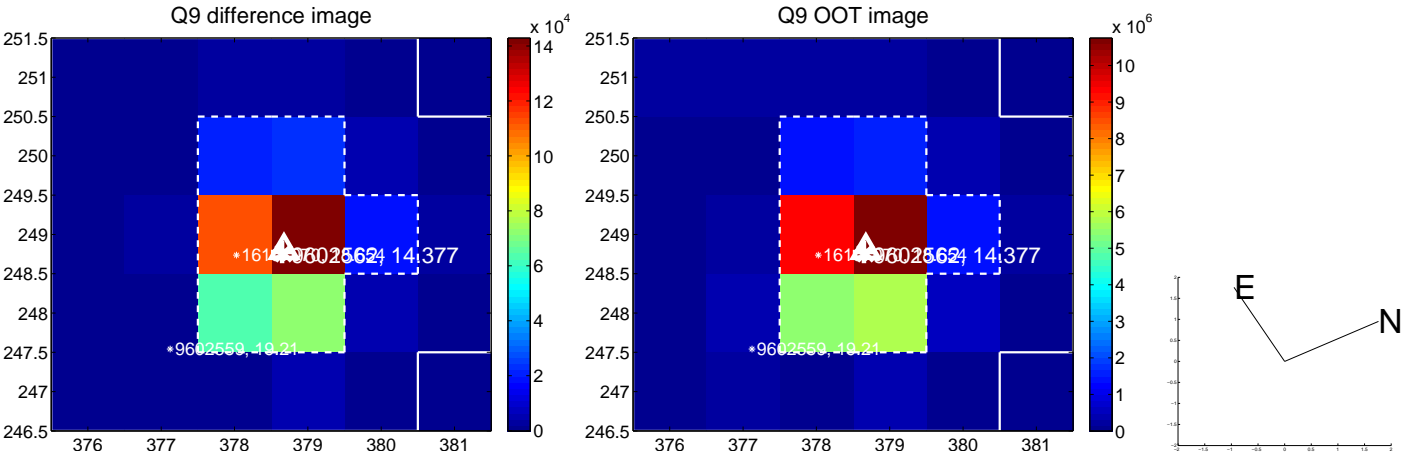
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



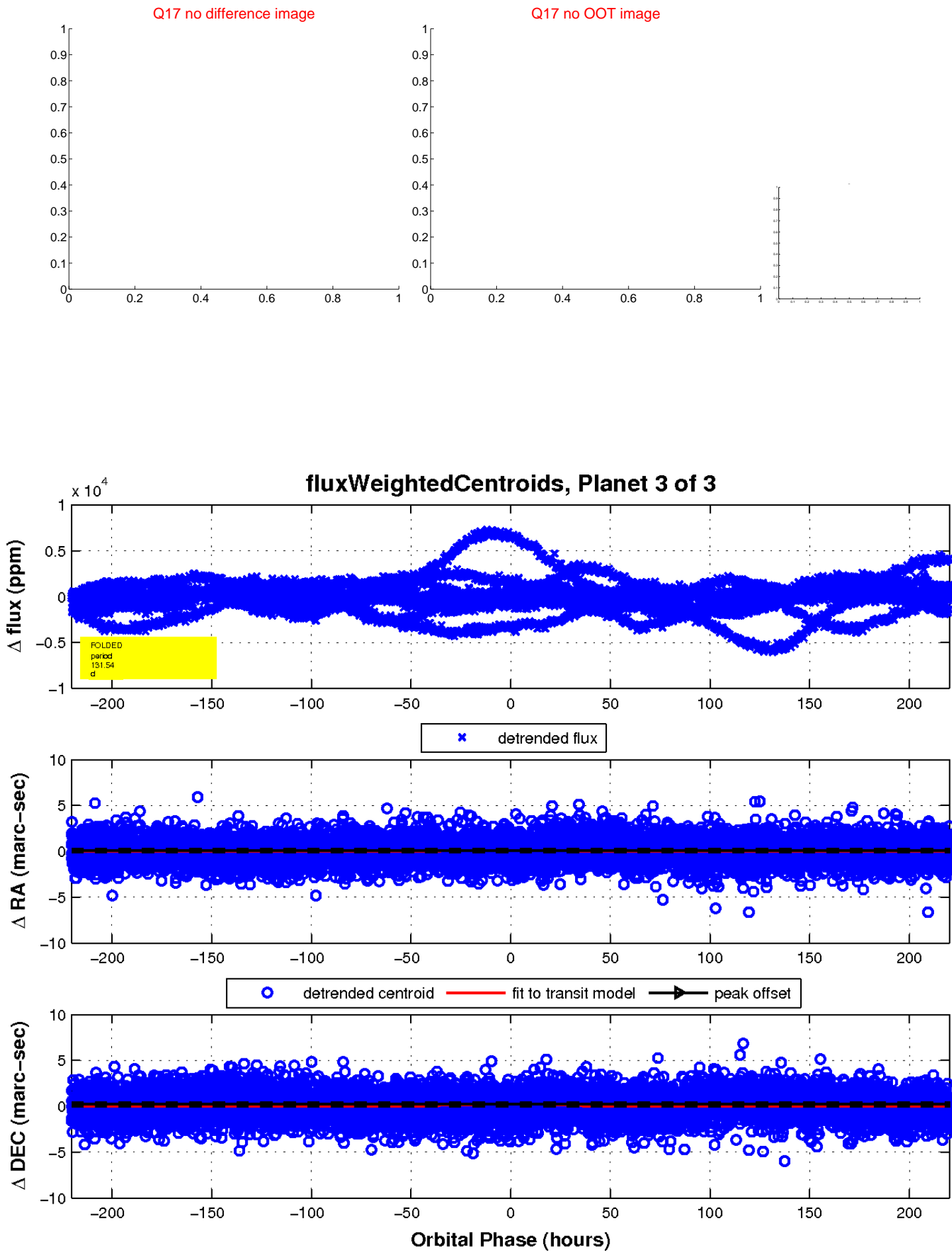
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

